# IDPlus 961-971-974 -HC

The range of hydrocarbon-compatible electronic controllers at the service of refrigeration installers

**04/19**

IDPHC-00EN

**www.eliwell.com**

# Contents

# Safety information

## Important information

Read these instructions carefully and visually inspect the equipment to familiarize yourself with the device before attempting to install it, put it into operation or service it. The following warning messages may appear anywhere in this documentation or on the equipment to warn of potential dangers or to call attention to information that can clarify or simplify a procedure.

The addition of this symbol to a danger warning label indicates the existence of an electrical danger that could result in personal injury should the user fail to follow the instructions.

This is the safety warning symbol. It is used to warn the user of the potential dangers of personal injury. Observe all the safety warnings that follow this symbol to avoid the risk of serious injury or death.

| ⚠ DANGER |
|---|
| **DANGER** indicates a dangerous situation which, if not avoided, **will result in** death or serious injury. |

| ⚠ WARNING |
|---|
| **WARNING** indicates a dangerous situation which, if not avoided, **could result in** death or serious injury. |

| ⚠ CAUTION |
|---|
| **CAUTION** indicates a potentially dangerous situation which, if not avoided, **could result in** minor or moderate injury. |

| *NOTICE* |
|---|
| *NOTICE* used in reference to procedures not associated with physical injuries. |

## Remember that

Electrical equipment must only be installed, used and repaired by qualified personnel.Neither Schneider Electric nor Eliwell assume any liability for any consequences arising from the use of this material.

A qualified person is one who has the skills and knowledge relating to the design and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

## Personnel qualification

Only trained personnel with a thorough knowledge and understanding of the contents of this manual and any other relevant product documentation are authorized to work on or with this product.The qualified person must be able to identify any hazards that may arise from setting parameters, the modifying of parameter values and, in general, from using mechanical, electrical and electronic equipment.In addition, the person must be familiar with health and safety regulations, rules and standards, which must be complied with while designing and implementing the system.

## Intended use

This product is used for the control of chiller cabinets.

The controller must be installed and used according to the instructions provided and, in particular, under normal conditions, parts with hazardous voltages must not be accessible.

The controller must be adequately protected from water and dust in relation to its application and must not be accessible except with the use of a tool (except for front access).

The controller is also suitable for household refrigeration appliances and/or similar equipment and has been tested for safety aspects in accordance with the harmonized European reference standards.

## Prohibited use

Any use other than what is indicated in the previous paragraph Intended Use is strictly prohibited.

The supplied relay contacts are electromechanical and subject to wear.The protection devices, required by international or local standards, must be installed outside the controller.

## Liability and residual risks

The liability of Schneider Electric and Eliwell is limited to the correct and professional use of the product in accordance with the directives contained in this and other supporting documents, and does not extend to any damage caused by the following (including but not limited to):

- installations/uses other than those provided for and, in particular, different from the safety requirements provided for by the current regulations in the country of installation of the product and/or given in this manual;
- use on equipment that does not provide adequate protection against electric shock, water or dust under the completed installation conditions;
- use on devices that allow access to hazardous parts without the use of a key-locking mechanism or tools to access the controller;
- tampering with and/or modification of the product;
- installation/use in devices that do not comply with the current regulations in the country of installation of the product.

## Disposal

The equipment (or the product) must be disposed of separately in compliance with the current local standards on waste disposal.

# Information on...

## Purpose of the document

This document describes the **IDPlus 961/971/974 -HC** controllers and their accessories, including installation and wiring information.

**Note**: please, read this document and related documents carefully before installing, operating or performing any maintenance on the controller.

## Note on validity

This document is valid for **IDPlus 961-971-974 -HC**

The technical specifications of the devices described in this manual are also available online at the website Eliwell.The characteristics described in this manual should be identical to those available online.Based on our policy of continuous improvement, it is possible that the contents of the documentation are reviewed over time to improve clarity and accuracy.If you notice a difference between the manual and online information, please give priority to the online information first.

## Related documents

| Publication title | Reference document code |
|---|---|
| IDPlus -HC Instruction Sheet | 9IS54703 |

You can download these technical publications and other technical information from our website at: www.eliwell.com

## Product related information

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# ⚡ ⚠ DANGER

**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- Always use a voltage sensing device calibrated to the nominal value to confirm the power is off where and when indicated.
- Before powering the device back up, fit back and fix all the covers, hardware components and wiring.
- Check the earthing connections on all earthed devices.
- Use this device and all connected products only at the specified voltage.

**Failure to follow these instructions will result in death or serious injury.**

</div>

# ⚡ ⚠ DANGER

**RISK OF ELECTRIC SHOCK AND FIRE**

- Do not expose the equipment to liquids.
- Do not exceed the temperature and humidity ranges specified in the technical specifications.

**Failure to follow these instructions will result in death or serious injury.**

# ⚡ ⚠ DANGER

**LOOSE WIRING CAN CAUSE ELECTRICAL SHOCK**

Tighten the connections according to the tightening torques in the technical specifications.

**Failure to follow these instructions will result in death or serious injury.**

Use copper wires (mandatory).The table below shows the type and size of wires for screw terminals with 5.00 mm (0.197 in) pitch:

| mm 7 / in. 0.28 | | | | | | | | | Ø 3.5 mm (0.14 in.) | ↻ c | N•m | 0.5...0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | lb-in | 4.42...5.31 |
| mm² | 0.2...2.5 | 0.2...2.5 | 0.25...2.5 | 0.25...2.5 | 2 x0.2...0.75 | 2 x 0.2...0.75 | 2 x0.25...0.75 | 2 x 0.5...1.5 | | | | |
| AWG | 24...14 | 24...14 | 24...14 | 24...14 | 2 x 24...18 | 2 x 24...18 | 2 x 24...18 | 2 x 20...16 | | | | |

# ⚠ DANGER

**RISK OF OVERHEATING AND FIRE**

- Use this device only at the specified voltage.
- Do not use with loads other than those indicated in the technical specifications.
- Do not exceed the maximum permitted current; for higher loads, use a contactor with sufficient power capacity.

**Failure to follow these instructions will result in death or serious injury.**

# ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION**

- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an enclosure appropriately rated for its intended environment and secured by a keyed or tooled locking mechanism.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions unless the equipment is otherwise designated as functional safety equipment and conforming to applicable regulations and standards.
- Do not disassemble, repair, or modify this equipment.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

# ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE**

Before handling the equipment, always discharge the static electricity from the body by touching an earthed surface or type-approved antistatic mat.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

# ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION**

The signal cables (probes, digital inputs, communication and relative power supplies) of the device must be laid separately from the power cables.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

The temperature probes (NTC/PTC/Pt1000) are not characterized by any insertion polarity and can be extended using normal bipolar wire. The extension of the probe wires affects the controller's electromagnetic compatibility (EMC).

# *NOTICE*

**UNINTENDED EQUIPMENT OPERATION**

- For I/O terminals (digital inputs and probes) use cables that are not longer than 10 m (32.80 ft).
- Use cables that are not longer than 3 m (9.84 ft) to connect the TTL serial line.

**Failure to follow these instructions can result in equipment damage.**

The loading procedure for one of the Default Applications restores the factory settings, i.e. the default values given in the parameters table, with the exception of the parameters which are not in the default applications **AP1**...**AP4** which maintain the previously set value. These values, when unedited, may not be suitable and may therefore need to be changed.

# *NOTICE*

**UNINTENDED EQUIPMENT OPERATION**

Check all the relevant parameters after uploading a default application.

**Failure to follow these instructions can result in equipment damage.**

## Flammable refrigerant gases

The use of flammable refrigerant gases depends on many factors, including current local, regional and/or national standards.

The devices and corresponding accessories described in this document use components and, more specifically, electromechanical relays tested in accordance with IEC standard 60079-15 and classed as nC components (non-incendive electrical devices with protection 'n').

Compliance with IEC standard 60079-15 is considered sufficient - and therefore ideal - for commercial refrigeration and HVAC systems which use flammable refrigerant gases, such as R290. Nevertheless, other limitations, devices, sites and/or machine types (refrigerators, vending machines and dispensers, bottle coolers, ice machines, chiller cabinets for self-service, etc.) may be involved or lead to restrictions and/or other constraints.

The use and application of information contained in this document requires experience in the design and parameter setup/programming of refrigeration and HVAC control systems. Only you, namely the original manufacturers of the machine, the installers, or the users, can be aware of the conditions and factors present, in addition to applicable standards during machine design, installation, setup, operation and maintenance (or related processes). As such, only you can decide the suitability of the automation and the corresponding equipment, and the resulting safety features and interlocks which can be utilized in an efficient and suitable manner at the sites in which the relevant equipment needs to be put into service. When the automation and control equipment - and any other related equipment or software - are selected for a particular application, the applicable local, regional and national standards and regulations must also be taken into consideration.

When using flammable refrigerant gases, machine compliance with all current regulations and standards must be checked after this controller and related equipment has been installed. Although all the declarations and information contained herein should be considered accurate and reliable, they are not covered by warranty. The information provided herein does not absolve the user from the responsibility of carrying out their own checks and verification processes in terms of any applicable standards.

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### ⚠ WARNING

**REGULATORY INCOMPATIBILITY**

Make sure that all equipment used and the systems designed comply with all applicable local, regional and national laws.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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# Introduction

## Presentation of IDPlus

### Introduction

IDPlus is a microprocessor-based electronic regulator for managing chiller cabinets, display windows and refrigeration units.It has four predefined parameter maps to configure the controller for some of the most used applications.The maps also allow the reduction of installation times and the amount of parameters to be changed.

## Application IDPlus 961 -HC

### Applications overview

| AP1: TN cold storage units with timed defrost |
| --- |
| AP2: TN cold storage units with no defrost |



| AP3: hot application | AP4: TN cold storage units with timed defrost, overheating control |
| --- | --- |
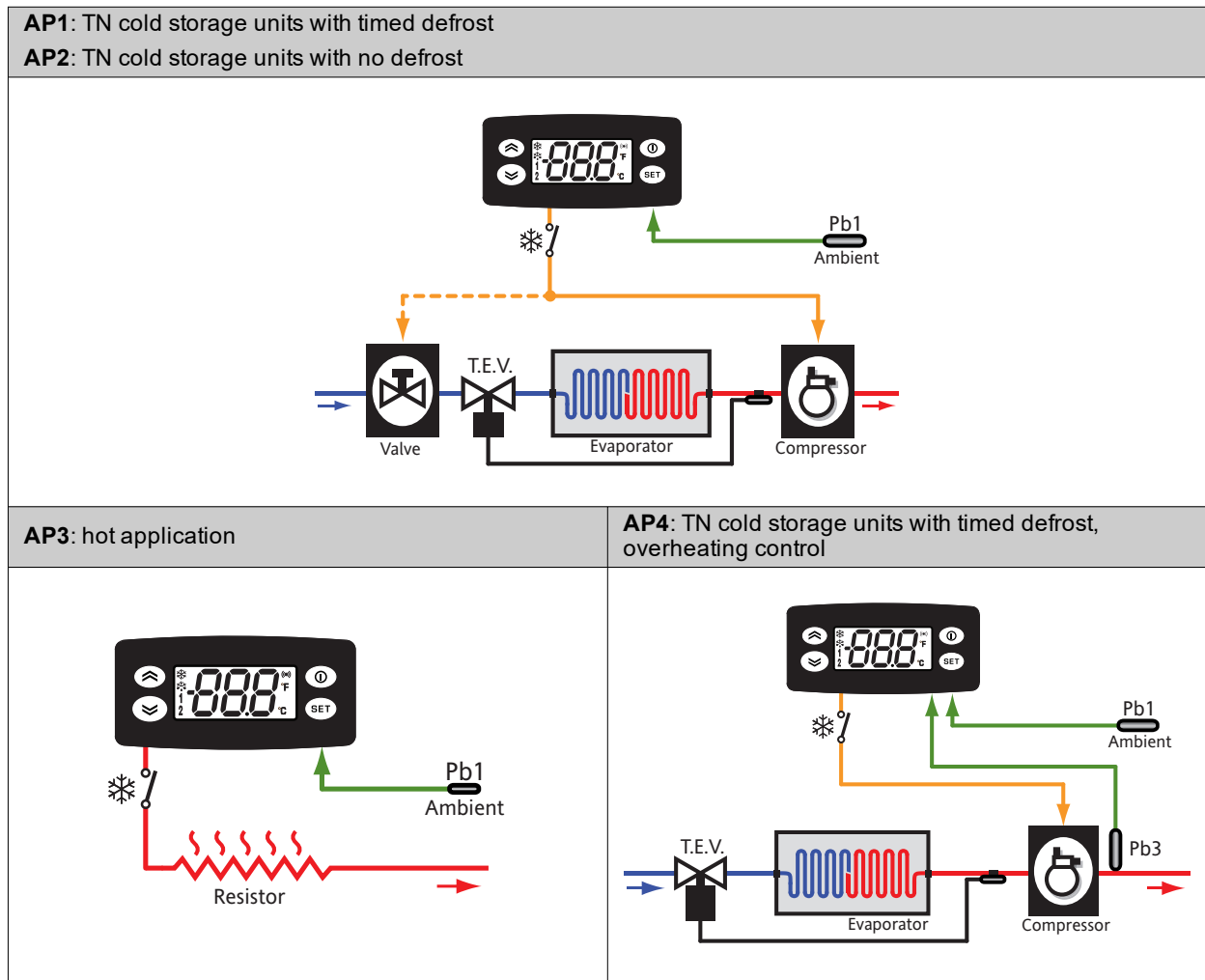


### Application details

| | |
| --- | --- |
| **Analogue inputs** | One NTC input (environmental probe Pb1) |
| **Digital inputs** | One digital input not set (**H11** = 0) |
| **Digital outputs** | Compressor relay:<br><br>• EU (maximum 250 Vac): 12(8) A<br>• U.S. (maximum 240 Vac): 12FLA / 72LRA |
| **Defrost end** | **AP1, AP4**<br>Timed (start delay **dOH** = 0 minutes, maximum duration **dEt** = 30 minutes)<br><br>**AP2, AP3**<br>Not set |

| Active alarms | **AP1, AP2, AP3, AP4** |
|---|---|
| | Maximum/minimum temperature on Pb1 (absolute values of **HAL** and **LAL**) |
| | **AP4** |
| | Compressor overheating on Pb3 |
| Button configuration | **AP1, AP4** |
| | ⏫: manual defrost |
| | ⏬: not set |
| | ⏻: standby |
| | **AP2, AP3** |
| | ⏫: not set |
| | ⏬: not set |
| | ⏻: standby |

# Application IDPlus 971 -HC

## Applications overview



AP1: BT cold storage units with temperature controlled defrost end

AP2: BT cold storage units with timed defrost end

AP3: TN ventilated cold storage units with temperature controlled defrost end, door management

AP4: TN cold storage units with timed defrost end, report alarm

## Application details

| | |
|---|---|
| **Analogue inputs** | AP1, AP3<br>Two NTC inputs (environmental probe Pb1 + evaporator probe Pb2) |
| | AP2, AP4<br>One NTC input (environmental probe Pb1) |
| **Digital inputs** | AP1, AP2, AP4<br>One digital input not set (**H11** = 0) |
| | AP3<br>One digital input set for door switch (**H11** = 4) |
| **Digital outputs** | Compressor relay:<br><ul><li>EU (maximum 250 Vac): 12(8) A</li><li>U.S. (maximum 240 Vac): 12FLA / 72LRA</li></ul>Defrost relay:<br><ul><li>EU (maximum 250 Vac): NA 8(4) A - NC 6(3) A</li><li>U.S. (maximum 240 Vac): NA 8 A / NC 6 A resistors - NA 4.9FLA / 29.4LRA</li></ul> |
| **Defrost end** | AP1, AP3<br>For temperature (**dSt** = 8.0 °C) |
| | AP2, AP4<br>Timed (start delay **dOH** = 0 minutes, maximum duration **dEt** = 30 minutes) |
| **Active alarms** | Maximum/minimum temperature on Pb1 (absolute values of **HAL** and **LAL**) |
| **Button configuration** | ⊗: manual defrost<br>⊗: not set<br>⊗: standby |

# Application IDPlus 974 -HC

## Applications overview

| **AP1**: BT cold storage units with end defrost by temperature | **AP2**: BT ventilated cold storage units, end defrost by temperature, HACCP alarms on dedicated probe |
|---|---|

| **AP3**: TN ventilated cold storage units, defrost with compressor stopped, door and light management (bottle cooler) | **AP4**: BT ventilated cold storage units, hot gas defrost (reverse cycle) |
|---|---|
|  |  |

## Application details

| | |
|---|---|
| **Analogue inputs** | Two NTC inputs (environmental probe Pb1 + evaporator probe Pb2) |
| **Digital inputs** | **AP1, AP4**<br>One digital input not set (**H11** = 0)<br><br>**AP2**<br>One NTC input (set as analogue which connects to Pb3)<br><br>**AP3**<br>One digital input set for door switch (**H11** = 4) |
| **Digital outputs** | Compressor relay:<br><br>• EU (maximum 250 Vac): 12(8) A<br>• U.S. (maximum 240 Vac): 12FLA / 72LRA<br><br>Defrost relay:<br><br>• EU (maximum 250 Vac): NA 8(4) A - NC 6(3) A<br>• U.S. (maximum 240 Vac): NA 8 A / NC 6 A resistors - NA 4.9FLA / 29.4LRA<br><br>Fan relay:<br><br>• EU (maximum 250 Vac): 5(2) A<br>• U.S. (maximum 240 Vac): 5 A resistors - 2FLA / 12LRA |
| **Defrost end** | **AP1, AP4**<br>Timed (start delay **dOH** = 0 minutes, maximum duration **dEt** = 30 minutes)<br><br>**AP2, AP3**<br>Not set |
| **Active alarms** | **AP1, AP2, AP3, AP4**<br>Maximum/minimum temperature on Pb1 (absolute values of **HAL** and **LAL**)<br><br>**AP2**<br>HACCP on Pb3 probe |
| **Button configuration** | **AP1, AP4**<br>⚌ : manual defrost<br>⚌ : not set<br>⓪ : standby<br><br>**AP2, AP3**<br>⚌ : not set<br>⚌ : not set<br>⓪ : standby |

# Mechanical assembly

## Before beginning

Please read this manual carefully before installing the system.

In particular, comply with all safety instructions, electrical requirements and current regulations for the machine or the process used on this equipment.The use and application of the information contained herein requires experience in the design and programming of automated control systems.Only the user, integrator or machine manufacturer can be aware of all the conditions and factors that occur during machine installation, configuration, operation and maintenance or the process and can therefore determine the associated automation equipment and its interlocks and safety systems that can be used effectively and appropriately.When choosing automation and control equipment and other related equipment and software, for a particular application, all applicable local, regional, and national standards and/or regulations must be considered.

| ⚠ WARNING |
|---|
| **REGULATORY INCOMPATIBILITY** |
| Make sure that all equipment used and the systems designed comply with all applicable local, regional and national laws. |
| **Failure to follow these instructions can result in death, serious injury, or equipment damage.** |

## Disconnect the power supply

| ⚡ ⚠ DANGER |
|---|
| **HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH** |
| • Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.<br>• Always use a voltage sensing device calibrated to the nominal value to confirm the power is off where and when indicated.<br>• Before powering the device back up, fit back and fix all the covers, hardware components and wiring.<br>• Use this device and all connected products only at the specified voltage. |
| **Failure to follow these instructions will result in death or serious injury.** |

## Operating environment

The use of flammable refrigerant gases depends on many factors, including current local, regional and/or national standards.

The devices and corresponding accessories described in this document use components and, more specifically, electromechanical relays tested in accordance with IEC standard 60079-15 and classed as nC components (non-incendive electrical devices with protection 'n').

Compliance with IEC standard 60079-15 is considered sufficient - and therefore ideal - for commercial refrigeration and HVAC systems which use flammable refrigerant gases, such as R290. Nevertheless, other limitations, devices, sites and/or machine types (refrigerators, vending machines and dispensers, bottle coolers, ice machines, chiller cabinets for self-service, etc.) may be involved or lead to restrictions and/or other constraints.

The use and application of information contained in this document requires experience in the design and parameter setup/programming of refrigeration and HVAC control systems. Only you, namely the original manufacturers of the machine, the installers, or the users, can be aware of the conditions and factors present, in addition to applicable standards during machine design, installation, setup, operation and maintenance (or related processes). As such, only you can decide the suitability of the automation and the corresponding equipment, and the resulting safety features and interlocks which can be utilized in an efficient and suitable manner at the sites in which the relevant equipment needs to be put into service. When the automation and control equipment - and any other related equipment or software - are selected for a particular application, the applicable local, regional and national standards and regulations must also be taken into consideration.

When using flammable refrigerant gases, machine compliance with all current regulations and standards must be checked after this controller and related equipment has been installed. Although all the declarations and information contained herein should be considered accurate and reliable, they are not covered by warranty. The information provided herein does not absolve the user from the responsibility of carrying out their own checks and verification processes in terms of any applicable standards.

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## ⚠ **WARNING**

**REGULATORY INCOMPATIBILITY**

Make sure that all equipment used and the systems designed comply with all applicable local, regional and national laws.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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# Installation Considerations

## Warnings

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## ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION**

- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an enclosure appropriately rated for its intended environment and secured by a keyed or tooled locking mechanism.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions unless the equipment is otherwise designated as functional safety equipment and conforming to applicable regulations and standards.
- Do not disassemble, repair, or modify this equipment.
- Do not connect wires to unused terminals and/or terminals indicated as "No Connection (N.C.)".

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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Take care when handling the equipment to avoid damage due to electrostatic discharge.In particular, uncovered connectors and in some cases uncovered printed circuit boards are extremely vulnerable to electrostatic discharge.

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## ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE**

Before handling the equipment, always discharge the static electricity from the body by touching an earthed surface or type-approved antistatic mat.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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## Mechanical dimensions
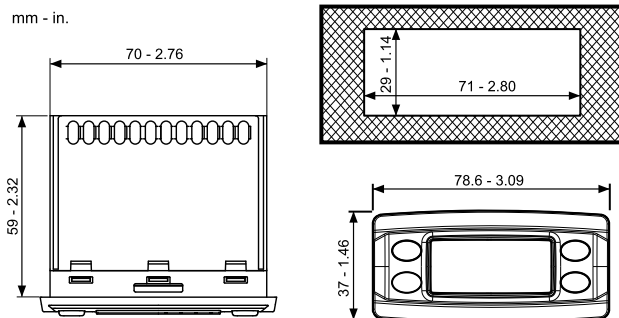


# IDPlus installation

## Install the controller

Drill a 29 x 71 mm (2.80 x 1.14 in) hole and insert the controller; secure it with the special brackets provided.

Leave the area near the slits free to allow air recirculation and cooling of the controller.The panel thickness must be between 0.5 mm (0.02 in) and 10 mm (0.39 in).

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0,5...10 mm (0.02...0.39 in.)
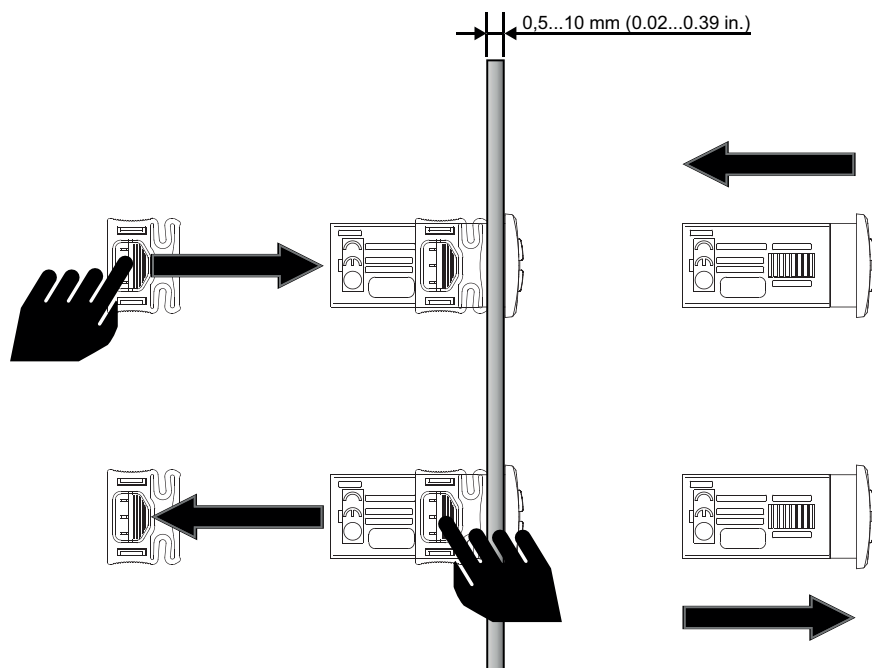
# Electrical connections

## Best practice for wiring

### Warnings

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### ⚡ ⚠ **DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- Always use a voltage sensing device calibrated to the nominal value to confirm the power is off where and when indicated.
- Before powering the device back up, fit back and fix all the covers, hardware components and wiring.
- Check the earthing connections on all earthed devices.
- Use this device and all connected products only at the specified voltage.

**Failure to follow these instructions will result in death or serious injury.**

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### Wiring Guidelines
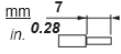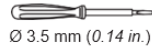
### ⚡ ⚠ **DANGER**

**LOOSE WIRING CAN CAUSE ELECTRICAL SHOCK**

Tighten the connections according to the tightening torques in the technical specifications.

**Failure to follow these instructions will result in death or serious injury.**

---

Use copper wires (mandatory). The table below shows the type and size of wires for screw terminals with 5.00 mm (0.197 in) pitch:

| mm / in. | 7 / 0.28 | | | | | | | | Ø 3.5 mm (0.14 in.) | C | | N•m | 0.5...0.6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | lb-in | 4.42...5.31 |
| mm² | 0.2...2.5 | 0.2...2.5 | 0.25...2.5 | 0.25...2.5 | 2 x0.2...0.75 | 2 x 0.2...0.75 | 2 x0.25...0.75 | 2 x 0.5...1.5 | | | | | |
| AWG | 24...14 | 24...14 | 24...14 | 24...14 | 2 x 24...18 | 2 x 24...18 | 2 x 24...18 | 2 x 20...16 | | | | | |

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### ⚠ **WARNING**

**UNINTENDED EQUIPMENT OPERATION**

The signal cables (probes, digital inputs, communication and relative power supplies) of the device must be laid separately from the power cables.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

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The temperature probes (NTC/PTC/Pt1000) do not have the normal bipolar cable. The extension of the probe wires affects the controller's electromagnetic compatibility (EMC).

## Connections

### Warnings

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### *NOTICE*

**UNINTENDED EQUIPMENT OPERATION**

- For I/O terminals (digital inputs and probes) use cables that are not longer than 10 m (32.80 ft).
- Use cables that are not longer than 3 m (9.84 ft) to connect the TTL serial line.

**Failure to follow these instructions can result in equipment damage.**

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## Legend

| Relay | Output | Symbol |
|-------|--------|--------|
| Compressor | **Out1** | ❄ |
| Defrost | **Out2** | ❄💧 |
| Fans | **Out3** | ❌ |

## Connections IDPlus 961 -HC
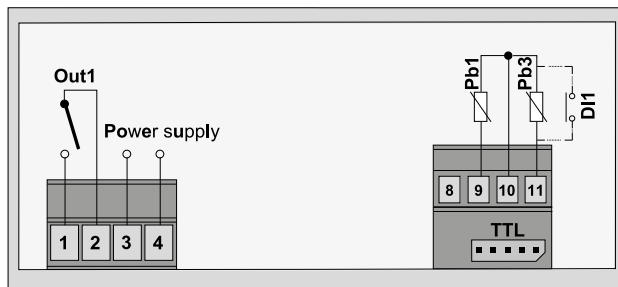


| Terminals | Description |
|-----------|-------------|
| **1-2** | Compressor relay (**Out1**) |
| **3-4** | 230 Vac power supply |
| **10-9** | Probe Pb1 |
| **10-11** | Digital input 1 (**H11**≠0 and **H43**=n) / Pb3 probe (**H11**=0 and **H43**=y) |
| **TTL** | Serial TTL |

## Connections IDPlus 971 -HC



| Terminals | Description |
|-----------|-------------|
| **1-2** | Compressor relay (**Out1**) |
| **3-4** | 230 Vac power supply |
| **5-6-7** | Defrost relay (**Out2**) |
| **8-10** | Probe Pb2 |
| **9-10** | Probe Pb1 |
| **10-11** | Digital input 1 (**H11**≠0 and **H43**=n) / Pb3 probe (**H11**=0 and **H43**=y) |
| **TTL** | Serial TTL / Digital input 2 |

## Connections IDPlus 974 -HC
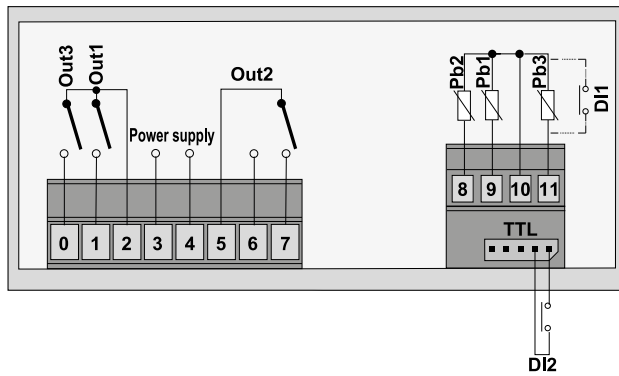


| Terminals | Description |
|-----------|-------------|
| 0-2 | Fan relay (**Out3**) |
| 1-2 | Compressor relay (**Out1**) |
| 3-4 | 230 Vac power supply |
| 5-6-7 | Defrost relay (**Out2**) |
| 8-10 | Probe Pb2 |
| 9-10 | Probe Pb1 |
| 10-11 | Digital input 1 (**H11**≠0 and **H43**=n) / Pb3 probe (**H11**=0 and **H43**=y) |
| TTL | Serial TTL / Digital input 2 |

## Unused digital inputs

If a digital input is not used it is necessary to:

- set **H11** (for digital input 1) or **H12** (for digital input 2) = 0, or
- set the input as follows:

| If the value of H11 or H12... | Then set the input as... |
|-------------------------------|--------------------------|
| < 0 (input normally closed) | closed |
| > 0 (input normally open) | open |

# Technical Specifications

## Technical data

| | |
|---|---|
| **The product conforms to the following harmonized standards** | EN 60730-1 / EN 60730-2-9 |
| **Construction of control** | Built-in electronic control device |
| **Purpose of control** | Operating control (non-safety related) device |
| **Type of action** | 1.B |
| **Pollution degree** | 2 |
| **Overvoltage category** | II |
| **Rated impulse voltage** | 2500 V |
| **Power supply** | 230 Vac (±10%) 50/60 Hz |
| **Power draw** | 4.5 VA |
| **Ambient operating conditions** | -5...55 °C (23...131 °F) 10…90% RH |
| **Transportation and storage conditions** | -30...85 °C (-22...185 °F) 10…90% RH |
| **Software class** | A |

**Note**: check the rated power supply on the controller plate.

**Note**: consult the Sales Office for availability of the relay and power supply capacities.

### Input characteristics

| | |
|---|---|
| **Buzzer** | Yes (depending on the model) |
| **Analogue inputs** | **IDPlus 961 -HC**: one NTC/PTC/Pt1000 input |
| | **IDPlus 971/974 -HC**: two NTC/PTC/Pt1000 inputs |
| **Digital inputs** | **IDPlus 961 -HC**: one voltage-free digital input (D.I.1), which can also be configured as a probe input. |
| | **IDPlus 971/974 -HC**: two voltage-free digital inputs (D.I.1 and D.I.2) |

**Note**: D.I.1 can also be configured as a probe input (**H11**=0 and **H43**=y)D.I.2, if activated, should be connected to terminals 1-2 of the TTL connector (ID Plus 971/974-HC).

### Output Specifications IDPlus 961 -HC

| | |
|---|---|
| **Compressor relay (Out1)** | EU (maximum 250 Vac): 12(8) A |
| | U.S. (maximum 240 Vac): 12FLA / 72LRA |

### Output Specifications IDPlus 971 -HC

| | |
|---|---|
| **Compressor relay (Out1)** | EU (maximum 250 Vac): 12(8) A |
| | U.S. (maximum 240 Vac): 12FLA / 72LRA |
| **Defrost relay (Out2)** | EU (maximum 250 Vac): NA 8(4) A - NC 6(3) A |
| | U.S. (maximum 240 Vac): NA 8 A / NC 6 A resistors - NA 4.9FLA / 29.4LRA |

### Output Specifications IDPlus 974 -HC

| | |
|---|---|
| **Compressor relay (Out1)** | EU (maximum 250 Vac): 12(8) A |
| | U.S. (maximum 240 Vac): 12FLA / 72LRA |
| **Defrost relay (Out2)** | EU (maximum 250 Vac): NA 8(4) A - NC 6(3) A |
| | U.S. (maximum 240 Vac): NA 8 A / NC 6 A resistors - NA 4.9FLA / 29.4LRA |
| **Fan relay (Out3)** | EU (maximum 250 Vac): 5(2) A |
| | U.S. (maximum 240 Vac): 5 A resistors - 2FLA / 12LRA |

## Probe values

| | |
|---|---|
| **Accuracy** | **NTC/PTC/Pt1000** -55...70 °C (-67...158 °F): better than 0.5% of full-scale + one digit. |
| | **Pt1000** 70...150 °C (158...302 °F): better than 0.6% of full-scale + one digit. |
| **Display range** | **NTC**: -50...110 °C (-58...230 °F); **PTC**: -55...140 °C (-67...284 °F); **Pt1000**: -55...150 °C (-67...302 °F); (on the display with three digits + signal) |
| **Resolution** | 0.1 °C (0.1 °F) |

**Note**: data concerning only the controller, without considering the probes (accessories not supplied).

## Mechanical characteristics

| | |
|---|---|
| **Connectors** | Serial TTL for CopyCard connections, UNICARD or D.I.2 (only IDPlus 971/974 - HC) |
| **Dimensions** | Front 78.6 x 37 mm (3.09 x 1.46 in), depth 59 mm (2.32 in) (terminals disabled) |
| **Mounting panel thickness** | 0.5...10.0 mm (0.02...0.39 in) |
| **Mounting** | Panel, with drilling template 71 x 29 mm (2.80 x 1.14 in). |
| **Terminals** | Screw |

## Network connections

| | |
|---|---|
| **Bus Adapter** | BA150 |
| **Bus Adapter / Interface connection** | Shielded and twisted RS485 cable (e.g. Belden model 8762) |
| **Controller / Bus Adapter connection** | 5-way TTL connector cable |
| **Transmission speed** | 9600 baud |

# User interface and use

## Description of the controller

### Interface

**IDPlus 961 -HC**

**IDPlus 971/974 -HC**

### Button

| Button | Function (brief pressure) | Function (5 seconds pressure) |
|---|---|---|
| ⊗ (up) | • Scroll through the menu items.<br>• Increasing values. | Only outside the menu.Configurable by the user (parameter **H31**).<br>Default: activate manual defrost. |
| ⊗ (down) | • Scroll through the menu items.<br>• Decreasing values. | Only outside the menu.Configurable by the user (parameter **H32**) |
| ⓪ (standby) | • Return to the upper-level menu.<br>• Confirm the parameter value. | Only outside the menu.Activate standby. |
| set | • Access the "Machine Status" menu.<br>• Display any alarms.<br>• When powered on, access the selection of applications to load. | • Access the "Programming" menu.<br>• Confirm the commands. |

### Icons

| Icon | Description |
|---|---|
| ❄ | On and steady: compressor active<br>Flashing: delay, protection or activation blocked |
| ❄ (defrost) | On and steady: defrost active<br>Flashing: manual activation or from digital input |
| 1 | On and steady: compressor in HEAT mode |
| 2 | Only IDPlus 961 -HC.<br>Flashing: rapid deep cooling active |
| ((•)) | On and steady: presence of an alarm<br>Flashing: alarm silenced |
| °F | On and steady: displayed in °F (**dro** = 1) |
| ⬤ | Flashing: reduced setpoint active<br>Fast flashing: access to level 2 parameters |
| °C | On and steady: displayed in °C (**dro** = 0) |

| Icon | Description |
|:---:|:---|
| ✖ | On and steady: fans active |
| AUX | On and steady: AUX output active (depending on the model) |

# Use the controller

## Power-on

Once the electrical connections are complete, power up the controller.

## First start up

For the first start up follow this procedure:

1. Select the preset application that most closely matches your own.
2. Configure the main parameters, indicated in the "User" menu, as per your requirements.
3. Check that there are no active alarms (alarm icon ((●)) off and the **E1**, **E2**, and **E3** labels not displayed).

   **Note**: **E2** is found only on the IDPlus 971/974 -HC.

## Select the application

The loading procedure for one of the Default Applications restores the factory settings, i.e. the default values given in the parameters table, with the exception of the parameters which are not in the default applications **AP1**...**AP4** which maintain the previously set value. These values, when unedited, may not be suitable and may therefore need to be changed.

---

# *NOTICE*

**UNINTENDED EQUIPMENT OPERATION**

Check all the relevant parameters after uploading a default application.

**Failure to follow these instructions can result in equipment damage.**

---
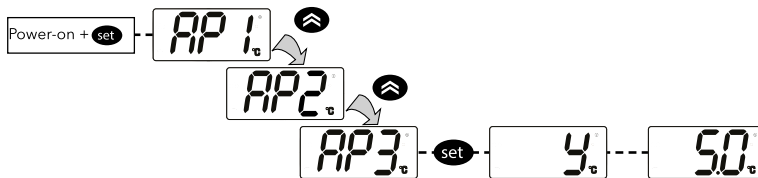


1. Turn on the controller and press and hold down the button **set**: the **AP1** label appears.
2. With the keys ⌃ and ⌄ scroll down the different applications (**AP1**-**AP2**-**AP3**-and**AP4**).
3. Press the button **set** to select the application desired (in the example the **Ap3**application): if the operation was successful the display shows **y**, otherwise it shows **n**.

   **Note**: to cancel the operation press the button ⏻ or stand by for the time-out.

4. Wait a few seconds: the display shows the main screen.

## Set the setpoint
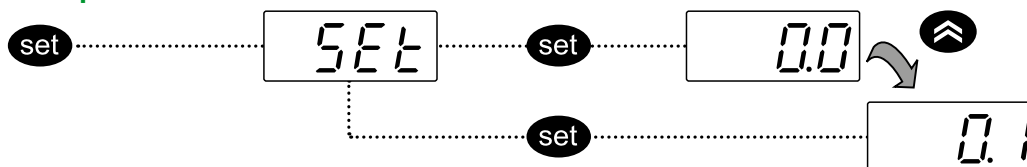


1. Press the **set** button: the "Machine Status" menu is displayed:
2. Scroll through the folders using the ⌃ and the ⌄ buttons until the **SEt** folder is displayed and then and press the **set** button: the current setpoint value appears.
3. Set the setpoint value with the ⌃ and ⌄ buttons within 15 seconds.
4. To confirm the value, press the **set** or the ⏻ button, or stand by for the time-out.

## Lock the button pad

To lock/unlock the button pad, press the ⏻ and the ⌃ buttons in the "Machine Status" menu.

The button pad can be locked automatically by setting the "LOC" parameter.

---

To display the setpoint with the button pad locked, press the (set) button.This value cannot be changed.

### Display the probe values

1. Press the (set) button: the "Machine Status" menu is displayed:
2. Scroll through the folders using the (⌃) and the (⌄) buttons until the **Pb1**, **Pb2**, and **Pb3** folders are displayed and then press the (set) button: the value measured by the associated probe appears.

   **Note**: the displayed value cannot be changed.

   **Note**: **E2** is found only on the IDPlus 971/974 -HC.

### Setting frequently used functions

To quickly access frequently used functions, you can associate them with certain buttons.To do this, you need to set some specific parameters.

| Button | Parameter |
|--------|-----------|
| (⌃) | **H31** |
| (⌄) | **H32** |

| H31/H32 value | IDPlus 961 -HC | IDPlus 971 -HC | IDPlus 974 -HC |
|---------------|----------------|----------------|----------------|
| 0 | disabled | disabled | disabled |
| 1 | defrost | defrost | defrost |
| 2 | not used | AUX | AUX |
| 3 | reduced set | reduced set | reduced set |
| 4 | standby | standby | standby |
| 5 | reset HACCP alarms | reset HACCP alarms | reset HACCP alarms |
| 6 | disable HACCP alarms | disable HACCP alarms | disable HACCP alarms |

### Set the main parameters

See the "User" menu in the parameter table of the various models.

### Restore the factory settings

If necessary, the factory values in the parameter map can be restored (example: Application 1 values).

To restore IDPlus, reload one of the basic applications (see "Select the application" on the previous page).

**Note**: this operation restores the controller's initial state by assigning the parameters to the factory default values.This means that all changes made to operating parameters will be lost.

# Set the probes

### Introduction

The probes connected to IDPlus must all be of the same type.

### Probe inputs

Depending on the model, the controller has the following inputs:

- one or two analogue inputs Pb1 and Pb2;
- a multifunction analogue/digital input that can be configured as a digital input (**H11** ≠ 0 and **H43** = n) or analogue probe Pb3 (**H11** = 0 and **H43** = y).

### Set the type of probes

In the **CnF** folder, in the "Installer" menu set the value of the **H00** parameter:

| Value of H00 | Probe type |
|--------------|------------|
| 0 | PTC |
| 1 (default) | NTC |
| 2 | Pt1000 |

### Calibrate the probes

To calibrate the values read by the probes, set the offset parameters **CA1** (input Pb1), **CA2** (input Pb2), and **CA3** (input Pb3).

**Note**: the **CA2** parameter is found only on the IDPlus 971/974 -HC.

# Setting the display

## Introduction

The following settings use the parameters inside the **diS** folder

## Set the display of the decimal point

In the **diS** folder, set the **ndt** parameter:

| ndt value | Description |
|---|---|
| **y** | Display the decimal point with the resolution to one tenth (-67.0...320.0) |
| **n** | Decimal point not displayed |

**Note**: this setting only affects the data display, not the reading or the controller's calculations.

## Set the default value displayed

In the **diS** folder, set the **ddd** parameter:

| ddd value | Description |
|---|---|
| **0** | Display setpoint |
| **1** | Displays the values read by Pb1 |
| **2** | Displays the values read by Pb2 (only IDPlus 971/974 -HC) |
| **3** | Displays the values read by Pb3 |

## Set the display during defrost

In the **diS** folder, set the **ddL** parameter:

| ddL value | Description |
|---|---|
| **0** | Displays the values read by Pb1 |
| **1** | Displays the values read by Pb1 at the start of defrost |
| **2** | Display the **dEF** label |

## Set the unit of measurement for the temperatures

In the **diS** folder, set the **dro** parameter:

| dro value | Description |
|---|---|
| **0** | °C readout |
| **1** | °F readout |

**Note**: the change from °C to °F or vice versa does not change the values of **SEt**, **diF**, etc.(example: **SEt** = 10 °C becomes **SEt** = 10 °F).The absolute value of the maximum and minimum limits of parameters are the same for both units of measurement but then the ranges are different from each other.

# Using the UNICARD/CopyCard

## Introduction

The UNICARD/CopyCard connects to the serial port (TTL) and allows the parameter map to be uploaded/downloaded.

Format the UNICARD/CopyCard the first time it is used.

The following features are exclusive to the UNICARD:

- It can be connected directly to the computer via USB.
- If powered by a USB power supply, it can power IDPlus during data upload/download.

## Load the IDPlus parameters to the UNICARD/CopyCard

1. Access the installer parameters by entering the password **PA2**, if enabled.
2. Scroll through the folders using the ⏶ and ⏷ buttons until the **FPr** folder is displayed and then and press the **set** button.
3. Scroll through the parameters using the ⏶ and ⏷ buttons until the **UL** parameter is displayed and then and press the **set** button: if the operation is successful, then **y** appears on the display, otherwise **n** appears.

### Formatting the UNICARD/CopyCard

1.  Access the installer parameters by entering the password **PA2**, if enabled.
2.  Scroll through the folders using the ⌃ and ⌄ buttons until the **FPr** folder is displayed and then and press the **set** button.
3.  Scroll through the parameters using the ⌃ and ⌄ buttons until the **Fr** parameter is displayed and then and press the **set** button: if the operation is successful, then **y** appears on the display, otherwise **n** appears.

### Download the parameters from the UNICARD/CopyCard to the IDPlus

Connect the UNICARD/CopyCard with the controller turned off.When the controller is powered on, the data is downloaded from the UNICARD/CopyCard to the controller automatically.After the lamp test, **dLy** appears on the display if the operation is successful; otherwise **dLn** appears.

**Note**: after downloading the data, IDPlus works immediately with the loaded map settings.

# HACCP Function

### Description

The HACCP function allows data relevant to the following events to be saved:

*   high and low temperature alarms read by Pb3 probe (temperatures beyond the limits of the **SLH**...**SHH** range),
*   blackouts.

The saved data is stored in the **AL** folder.

### Reporting a temperature alarm

When the temperature measured by the Pb3 ambient probe is out of the **SLH**...**SHH** range for a time longer than the **drA** parameter, an alarm is reported and displayed in the **AL** folder, and the ((●)) alarm icon lights up on the display.

If the alarm stops because the temperature returns within the set range, the icon remains in its previous condition (on and steady or flashing) to report the event.

### Saving data from high and low temperature alarms

The relevant data for high and low temperature alarms are saved in two folders in the **AL** folder:

*   **HCn**: maximum or minimum temperatures out of range.
*   **tCn**: time interval during which the temperature remained outside the range.

**n** is a number between 1 and 8 that indicates how many times the probe has measured temperatures out of range.There can be up to eight folders to store the temperatures (**HC1**...**HC8**) and up to eight folders for the times (**tC1**...**tC8**).

The first eight alarms are stored sequentially in the **HC1**...**HC8** and **tC1**...**tC8** folders.After the eighth alarm, the data from additional alarms overwrite the existing data starting from the oldest records (**HC1** and **tC1** folders).

If there are more than eight alarms, the **HC8** folder flashes.

### Saving data after a blackout

The relevant data in case of a blackout are saved in two folders in the **AL** folder:

*   **bCn**: maximum or minimum temperatures out of range.
*   **btn**: time interval during which the temperature remained outside the range.

**n** is a number between 1 and 8 that indicates how many times the controller was reset due to a blackout.There can be up to eight folders to store the temperatures (**bC1**...**bC8**) and up to eight folders for the times (**bt1**...**bt8**).

| If at the end of the blackout the probe Pb3 measures a temperature... | Then... | And... |
|---|---|---|
| **SLH**...**SHH** in range | **bCn** shows the temperature value | **btn** shows the zero value. |
| **SLH**...**SHH** out of range | an HACCP alarm is generated | <ul><li>**bCn** shows the measured maximum or minimum temperature value.</li><li>**btn** shows the time elapsed outside the temperature range.</li></ul> |

After eight blackouts, the **bC8** folder flashes and the data for subsequent blackouts overwrite the existing data starting from the oldest (the **bC1** and **bt1** folders)

## Recognizing an alarm

When an alarm signal appears on the display, press any button: the alarm icon ((●)) flashes to confirm recognition.

## Blocking alarm signals

To avoid false HACCP alarm reports, the signal can be inhibited for a time equal to the value of the **H51** parameter, after closing or opening (depending on the sign of the **H11** or **H12** parameter) of the D.I.1 or D.I.2 digital inputs and/or after pressing the ⊗ (**H31**) or ⊗ (**H32**) button.

If the alarm is already present during defrost, when the digital input is opened or when the block button has been pressed, saving the maximum or minimum temperature and the time out of range continues until the temperature value returns within the range.

## Resetting HACCP alarms

The **rES** function (reset HACCP) performs the following operations:

- clears the HACCP alarms, i.e. in these folders **HC1**…**HC8**, **tC1**...**tC8**, **bC1**...**bC8**, and **bt1**...**bt8**
- resets the counter **drH**
- turns off the ((●)) alarm icon.

The function can be activated manually in the **FnC** folder, or by pressing an appropriately configured button using the **H31** or **H32** parameter.

After the time **drH** ≠ 0 since the last reset or blackout, all HACCP alarms are deleted automatically.If during this time interval, the controller is blacked out, the **drH** counter is reset to the value specified in the parameter.The next automatic reset takes place after a time equal to **drH** from the end of the blackout.

# Functions and regulators

## Compressor/general

### Description

The compressor is controlled by the controller relay.This is powered on/off based on the following elements:

- the status of the temperature readings from probe Pb1
- the temperature control functions set
- the defrost/drain cycle functions (see "Defrost and drain cycles" on page 31).

See the wiring diagrams for details of how to connect the compressor to the controller.

The polarity of the relay is fixed and cannot be configured.

**Note**: digital output 1 is always set to "Compressor".

### Activation of the regulator with respect to defrost

Using the **Cod** parameter, it is possible to avoid the activation of the regulator near a defrost cycle.

In fact, before activating the compressor, the controller checks whether the next defrost is expected after a shorter time than the value of the **Cod** parameter.

| If the next defrost is expected after a time... | Then the compressor... |
|---|---|
| less than the value of the **Cod** parameter | it is not activated. |
| greater than the value of the **Cod** parameter | it is activated. |

### Operating conditions

The controller is activated if all of the following conditions are met:

- The controller is powered on.
- There is no E1 alarm when the control probe is not working.
- The time set with the **OdO** parameter (if **OdO** ≠ 0) has expired.
- A defrost cycle is not under way (except in free mode).
- There are no external alarms blocking the compressor.
- There are no overheating alarms on probe Pb3 (if **H11** = 0 and **H43** ≠ 0).

There is a fixed interval of one second between the request for and activation of the relay.

### Control diagrams

The following graphs show how to activate the compressor, for hot or cold production, with the parameters **SEt** and **diF** > 0:
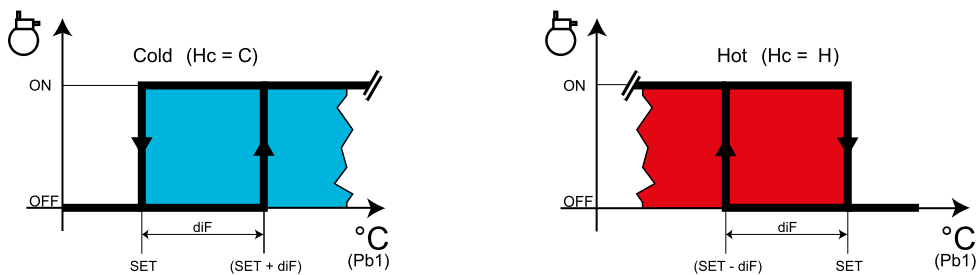


### Parameters

| Parameter | Description |
|---|---|
| **SEt** | Control Setpoint |
| **diF** | Regulator activation differential |
| **HSE** | Maximum value settable for setpoint |
| **LSE** | Minimum value settable for setpoint |
| **OSP** | Setpoint offset |
| **Hc** | Control mode selection (**H** = Heating / **C** = Cooling) |
| **OdO** | Delay output activation from power-on |
| **tcd** | Compressor output enabling/disabling time before a defrost |
| **Cod** | Time the compressor is powered off before defrost |

# Compressor/general protections

## Description

If the cell probe is in error E1, the compressor/generic output relay works according to the times set with the **Ont** and **Oft** parameters.

The first time to consider is **Ont**.If **Ont** >0 there must still be compliance with the protection set in parameters **dOn**, **dOF** and **dbi** (see "Compressor safety timings" below).

**Note**: the **OdO** parameter blocks the activation of any output relay for its entire duration, excluding buzzer and alarm relays.

## Operating conditions

| Ont | OFt | Compressor output |
|---|---|---|
| 0 | 0 | OFF |
| 0 | >0 | OFF |
| >0 | 0 | ON |
| >0 | >0 | Duty cycle, regardless of probe values (cell probe not working) and requests from other utilities |

**Note**: if the cell probe is working, the duty cycle mode is not active; in fact, it does not have priority over the normal compressor regulator settings.

## Duty-cycle control diagram
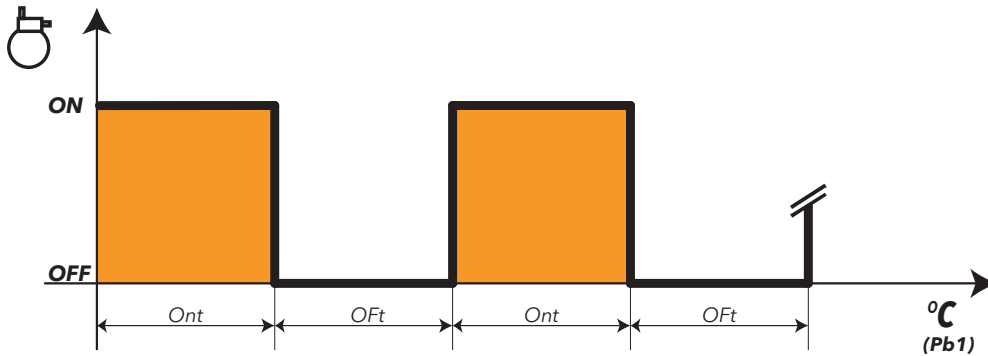


## Compressor safety timings

The powering on and off of the compressors must comply with the safety time that can be set.

Between the compressor power-off and its next power-on, as well as after standby, there must be compliance with the safety time set with the **dOF** parameter.Between the compressor power-on request and its actual start-up there must be compliance with the safety time set with the **dOn** parameter.

**Note**: the compressor icon flashes when activation has been requested of the compressor while it is in protection.

Below is the operating diagram of the compressor protection:
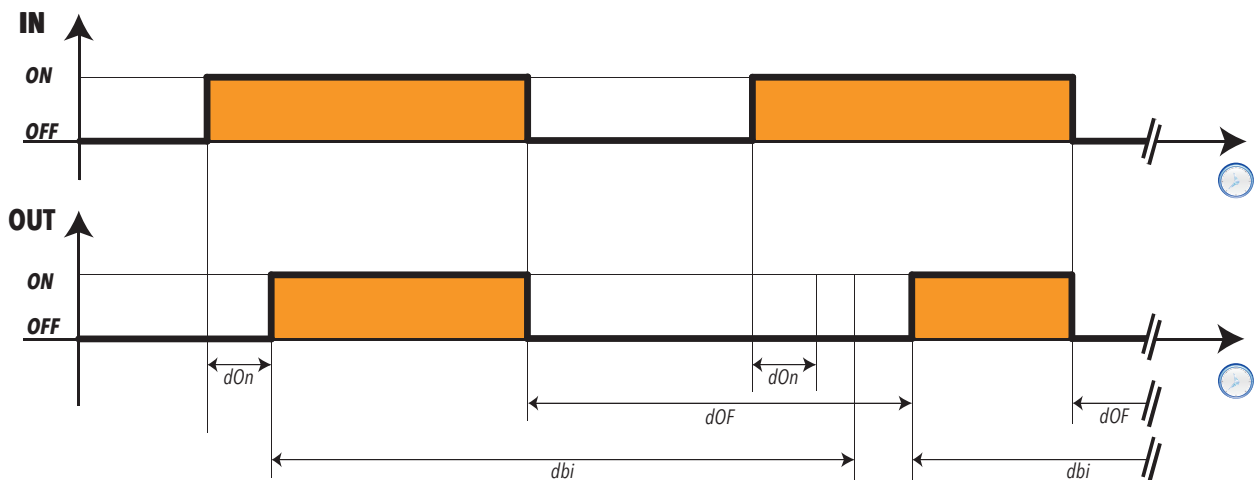


**Legend**

| | |
|---|---|
| **IN** | Input status for the compressor regulator |
| **OUT** | Output status for the compressor regulator |

## Parameters

| Parameter | Description |
|-----------|-------------|
| **Ont** | Compressor output ON time in the event of a faulty Pb1 probe |
| **OFt** | Compressor output OFF time in the event of a faulty Pb1 probe |
| **dOn** | Compressor output enabling delay from request |
| **dOF** | Compressor output enabling delay from shutdown |
| **dbi** | Delay between two consecutive starts of the compressor output |
| **OdO** | Output activation delay after power-on |

# Defrost and drain cycles

## Introduction

Defrost is used to remove ice from the surface of the evaporator.

After the defrost, there is water on the evaporator.Before producing cold, perform the drain cycle to prevent the ice from reforming immediately.

## Operating conditions

Defrost starts automatically if:

- the evaporator temperature, read by probe Pb2, is lower than the set defrost end temperature set in the **dSt** parameter (only IDPlus 971/974 -HC with Pb2 probe present - **H42** ≠ 0).
- manual defrosting has not already been activated, in which case the request for automatic defrost is canceled.

## Defrost mode

To select the defrost mode, set the **dtY** parameter.

Defrosting takes place by heating the evaporator in one of the following modes:

| Defrost mode | Description | Models | dtY Value |
|--------------|-------------|--------|-----------|
| Electric heaters<br>**Note**: low temperature applications only. | With defrost, the compressor stops and energizes the relay, configured as a defrost regulator output, to which the electrical heaters are connected.At the end of defrost, the heating elements are powered off and the compressor remains stopped for the drain cycle time set with parameter **dt**, if other than zero.After the drain cycle time has elapsed, the compressor powers-on again. | 971/974 -HC | **0** |
| To stop the compressor<br>**Note**: normal temperature applications only. | The compressor remains stopped for the duration of the defrost cycle. | All | **0** |
| Hot gas (cycle reversal)<br>**Note**: low temperature applications only. | The compressor remains on for the duration of the defrost cycle and the relay configured as the defrost regulator output to which the solenoid valve is connected is activated.<br><br>At the end of the defrost cycle, the valve relay and the compressor relay are de-energized.The compressor relay is stopped for the duration of the drain cycle, set by the **dt** parameter (if other than zero).At the end of the drain cycle, the compressor relay returns under control of the compressor regulator. | 971/974 -HC | **1** |
| Free | The compressor remains under the control of the compressor regulator for the duration of the defrost cycle and the relay configured as defrost, and that the defrost heaters are connected to, activates.<br><br>The heaters are powered off upon completion of the defrost cycle.During the drain cycle, the compressor continues to stabilize the temperature. | 971/974 -HC | **2** |

## Set the drain cycle interval

Set the drain cycle interval with the **dt** parameter.

**Note**: the **dt** parameter is only present on the IDPlus 971/974 -HC models, which can control the evaporator fans (Pb2).

## Defrost end

Defrost ends under the following conditions:

| Condition | Evaporator probe (Pb2) | Value of H42 |
|---|---|---|
| Defrost time-out temperature setpoint reached, set with the **dEt** parameter | Absent | 0 |
| Defrost end temperature setpoint reached, set with the **dSt** parameter.<br><br>**Note**: only IDPlus 971/974 -HC. If the setpoint is not reached within the time set with the **dEt** parameter (defrost time-out), the defrost ends anyway due to time-out. | Present | 1 |

**Note**: to manually end defrost, power off and on the controller or use the ON/OFF function.

**Notes for defrost end with electric and hot gas heaters**

- If **dSt** is activated before **dEt**, the drain cycle (**dt** and **Fdt**) is brought in correspondence with **dSt**.
- If **Fdt** < **dt** is set **Fdt** = **dt**.
- During defrost, the fans are powered off if **dFd** = y; otherwise the other fan controller settings follow.

**Notes for defrost cycle end after compressor stop**

Only IDPlus 971/974 -HC.At the end of the defrost cycle, the compressor relay remains de-energized for the drain cycle time set with the **dt** parameter (if other than zero).

## Control diagrams

**Electric heater defrost**
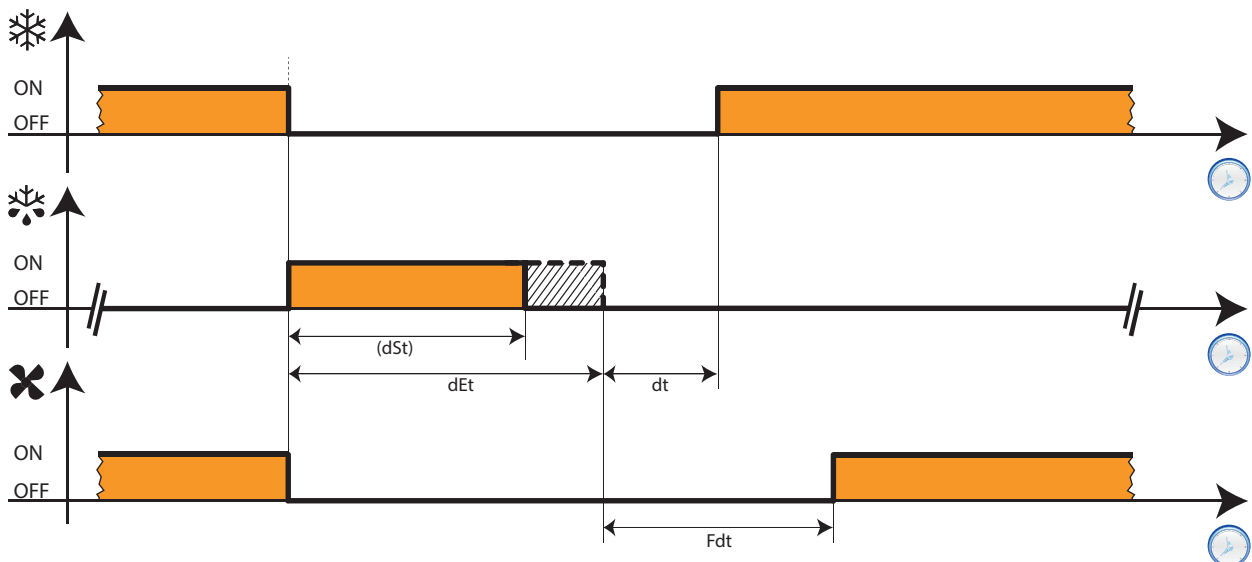


**Defrost due to compressor stop**

**Hot gas defrost**

❄ 

ON
OFF

❄

ON
OFF

(dSt)

dEt    dt

✖

ON
OFF

Fdt

❄

ON
OFF

❄

ON
OFF

(dSt)

dEt    dt

✖

ON
OFF

Fdt
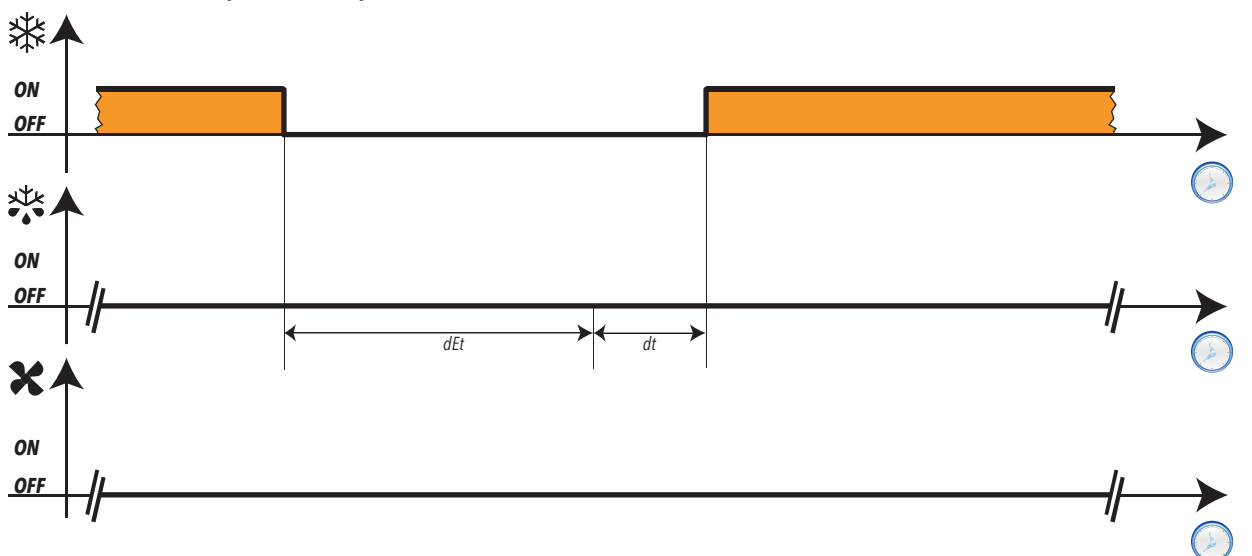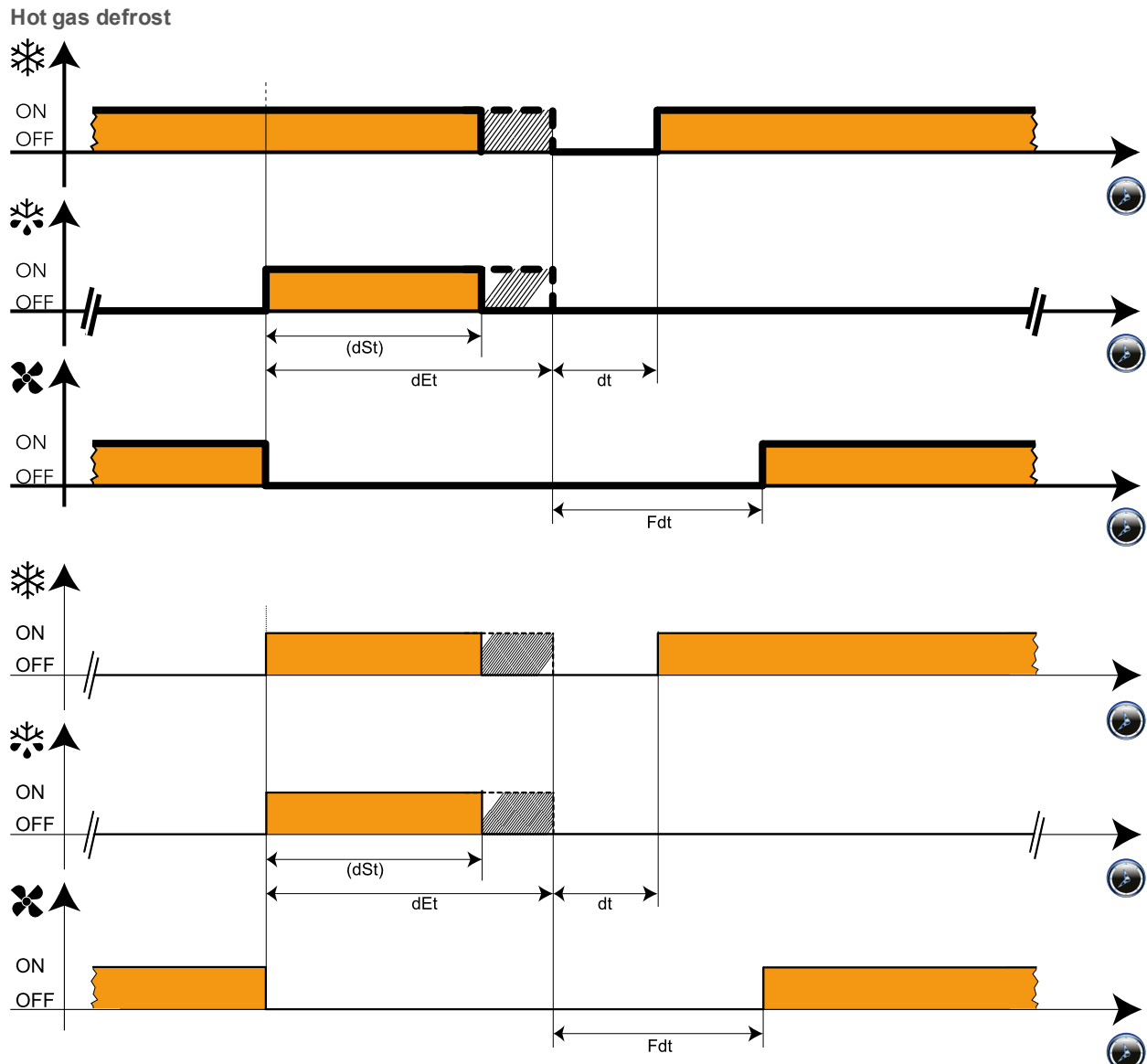
## Alarm function during defrost

**Note**: only IDPlus 971/974 -HC.

It is possible to activate a defrost end alarm due to time-out can be activated by setting the **dAt** parameter (see "Alarms and signals" on page 43, alarm **Ad2**).

In the event of an environmental probe (Pb1) error, defrost cycles will still be run.

During the defrost cycle, the temperature values read by the Evaporator probe (Pb2) and probe 3 (Pb3) may be false readings.For this reason, the temperature alarm is disabled.

## Display during the defrost cycle

Appropriately setting the **ddL** parameter, when the controller starts the defrost cycle, the value shown on the display can be configured in one of the following ways:

- display of the temperature read by the ambient probe (Pb1)
- fixed display of the temperature value read by the ambient probe (Pb1) when the defrost cycle begins
- fixed display of the **dEF** label (defrost)

## Unlock display

The display can be unlocked in one of the following ways:

- after reaching the setpoint (only IDPlus 971/974 -HC)
- after reaching the time-out value to unlock the display, defined by the **Ldd** parameter

**Note**: the **Ldd** parameter can be used in a network link to unlock other resources as well.

**Note**: only IDPlus 971/974 -HC: unlocking the display, if set, occurs in any event after the drain cycle, because this locks the regulators.

# Starting defrost

## Introduction

The defrost cycle can be started in one of the following ways:

- When the controller is powered on, if the **dPO** parameter is set.
- At regular time intervals if set (**dit** parameter).See "Star automatic defrost" below.
- By manually pressing the <button> button, if enabled (**H31** = 1).See "Start the defrost cycle manually" below.

  **Note**: if the **OdO** count is in progress, the cycle does not start, the request is rejected and the display flashes three times to indicate that defrosting is not possible.

- By external request from a digital input, if properly configured.Activation by digital input respects the automatic cycle protections.

  **Note**: if the **OdO** count is in progress, the cycle does not start, the request is rejected and the display flashes three times to indicate that defrosting is not possible.

## Star automatic defrost

In automatic mode, the defrost cycle is programmed to start at intervals.If **dit**>0, the defrost cycles runs at fixed intervals indicated by the **dit** parameter.

**Note**: to disable automatic defrost, set **dit**=0.

The interval is calculated from the value of the **dCt** parameter:

| dCT value | Mode | Description |
|---|---|---|
| 0 | Compressor working time (DIGIFROST® method) | The meter runs only if the compressor is on.At the end of the defrost interval, a new count starts and a defrost cycle starts if the conditions for doing so are met. |
| | | **Note**: the compressor run time is metered regardless of the evaporator temperature.If the evaporator probe is missing or malfunctions, the meter continues for the time the compressor is on. |
| 1 | Controller working time | The defrost interval is counted continuously when the controller is on and starts at each power-on. |
| | | When the defrost interval ends (indicated by **dit**), a defrost cycle begins, if the conditions are met, and a new defrost interval count begins. |
| 2 | Compressor stop | Each time the compressor stops, a defrost cycle is run according to the mode set in the **dtY** parameter. |
| | | **Note**: the **dtY** parameter is only displayed and can be set on IDPlus 971/974 -HC models.In IDPlus 961 -HC models, each time the compressor stops a defrost cycle is run. |

All modes, the interval is counted according to the conditions below:

**IDPlus 961 -HC**: if the time set with the parameter **OdO**≠0 has not expired, there are no conditions for the defrost cycle, so another count starts and only at the end of this count are the conditions to start the defrost cycle checked again.

**IDPlus 971/974 -HC**: if the time set with **OdO**≠0 has not expired and if the temperature of the evaporator probe (Pb2) is higher than the value of the **dSt** parameter, the conditions for the defrost cycle are not met.Therefore another count starts and only at the end of this count are the conditions for starting the defrost cycle checked again.

## Start the defrost cycle manually

Manual defrosting is always possible except if **dit** = 0.

To start a manual defrost cycle, press the button <button> (if **H31** = 1).The defrost interval is counted in the same way as for the automatic defrost (the **dit** time is not reset but continues).

If the time set by the **OdO** parameter has not expired and if the evaporator temperature is higher than the value of the **dSt** parameter (only IDPlus 971/974 -HC), the display flashes three times and the defrost cycle does not start.

The activation procedures for manual defrosting are similar to those for external defrosting.

## Start defrost with an external request

A defrost cycle can also be activated with an external request.To do this, the digital input must be enabled, i.e. **H11** or **H12** parameters set to **1** (only IDPlus 971/974 -HC).The relevant controller is activated if the conditions for doing so are met.

**Note**: the defrost cycle is activated on the rising edge of the logic level.Therefore, a defrost cycle can only be activated but a defrost cycle in progress cannot be stopped.A defrost or a drain cycle currently underway and the defrost or a drain interval count cannot be suspended.

## Control diagrams

Below are the control diagrams in the various operating combinations.
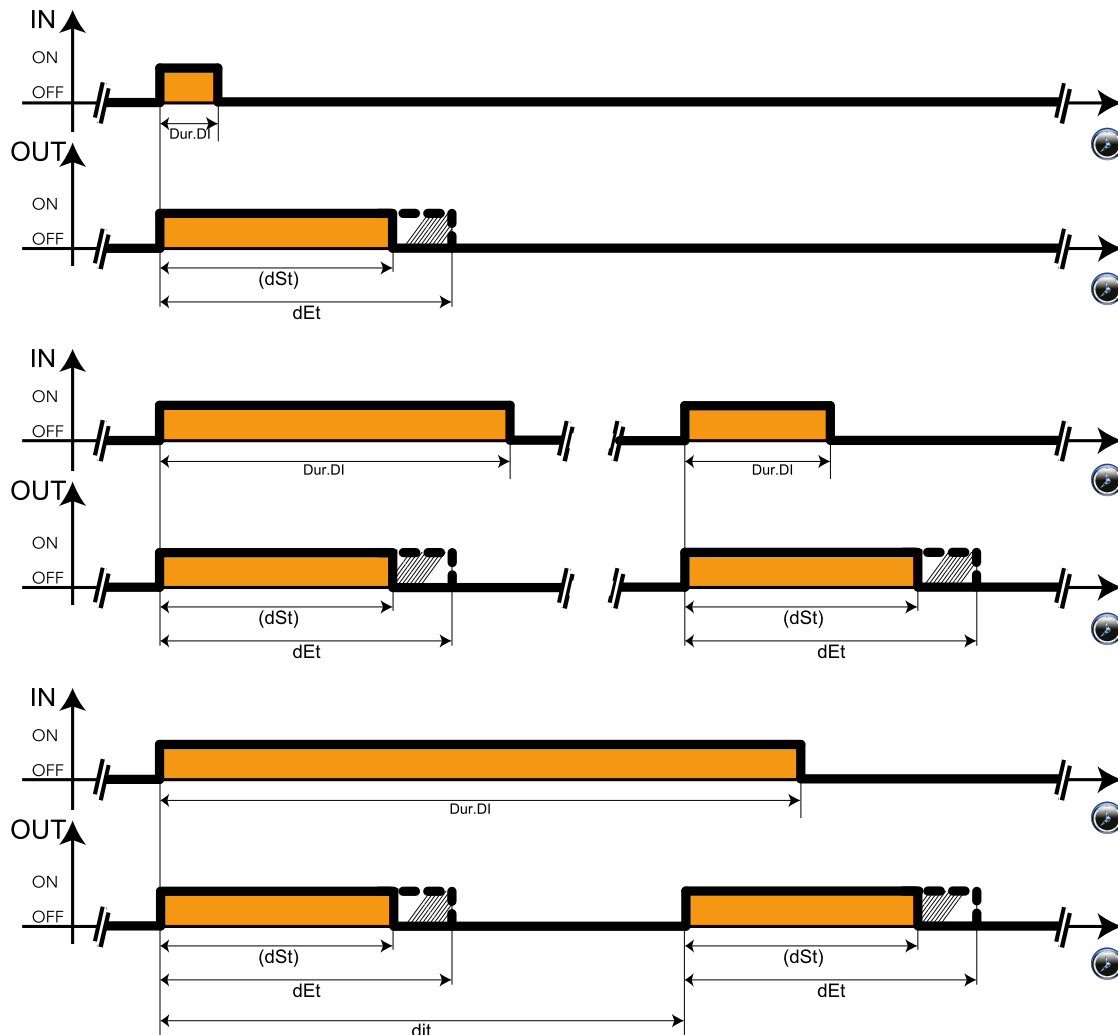
**Legend**

| IN (digital input) | Input status for defrost regulator, with activation from digital input |
|---|---|
| OUT (defrost) | Output status for defrost regulator |
| Dur | Digital input duration |
| dSt | Only IDPlus 971/974 -HC.Defrost cycle end time when setpoint temperature is reached. |
| dEt | Defrost timeout |

## Parameters

Below are the parameters that manage the defrost and drain cycles:

| Folder | Parameter | Description | Model |
|---|---|---|---|
| dEF | dtY | Type of defrost | 971/974 -HC |
| dEF | dit | Interval between the start of two defrost cycles | All |
| dEF | dCt | Defrost interval count mode | All |
| dEF | dOH | Defrost cycle start delay | All |
| dEF | dEt | Defrost timeout. Determines the maximum defrost duration. | All |
| dEF | dSt | Defrost end temperature (detected by probe Pb2) | 971/974 -HC |

| Folder | Parameter | Description | Model |
|--------|-----------|-------------|-------|
| **dEF** | **dPO** | Activate defrost request at power on, if the temperature measured by Pb2 allows it. | All |
| **Fans** | **Fdt** | Evaporator fan activation delay after defrost cycle | 971/974 -HC |
| **Fans** | **dt** | Coil drainage time | 971/974 -HC |
| **Fans** | **dFd** | Evaporator fans disabling during defrost time | 971/974 -HC |
| **AL** | **dAO** | Temperature alarm disabling time after defrost cycle | All |
| **AL** | **dAt** | Defrost alarm reset after timeout | 971/974 -HC |
| **diS** | **ddL** | Display mode during defrost | All |
| **diS** | **Ldd** | Display lock timeout from defrost end | All |

# Fans

**Note**: only IDPlus 971/974 -HC.

## Operating conditions

The regulator is activated if all of the following conditions are met:

- The time set with the **OdO** parameter (if **OdO** ≠ 0) has expired.
- The temperature read by the evaporator probe (Pb2), if present, is lower than the value of the **FSt** parameter.
- It is not disabled by the **dFd** parameter during the defrost cycle (**dFd** = y).
- The drain cycle is not active (**dt**).
- The fan delay after the defrost cycle (**Fdt**) is not active.

## Regulator activation

The request for activation or deactivation of the fans can be performed in the following modes:

- by the compressor control, to facilitate the production of cold (temperature control mode)
- by the defrost regulator to check and/or limit the diffusion of hot air.

## Operating modes

| Probe Pb2 | H42 | FCO | Fans with compressor ON | Fans with compressor OFF |
|-----------|-----|-----|-------------------------|--------------------------|
| Present | y | 0 | Thermostats | Off |
| | | 1 | Thermostats | Thermostats |
| | | 2 | Thermostats | Day or night duty cycle |
| In error **E2** | y | 0 | On and steady | Off |
| | | 1 | On and steady | On and steady |
| | | 2 | On and steady | Day or night duty cycle |
| Absent | n | 0 | On and steady | Off |
| | | 1 | On and steady | On and steady |
| | | 2 | On and steady | Day or night duty cycle |

**Note**: Day or Night duty cycle depending on whether the controller is operating in Day or Night mode.

## Fan function in thermostat control

During cold production, fan temperature control is performed according to the temperature values set with the parameters **FSt** (temperature fan block) and **FAd** (fan differential). The temperature values set are absolute when **FPt** = 0 (actual temperature value).

**Note**: approaching the fan start temperature (-50°C) the differential always refers to the **FAd** parameter but with the sign reversed.

The control diagram is as follows:
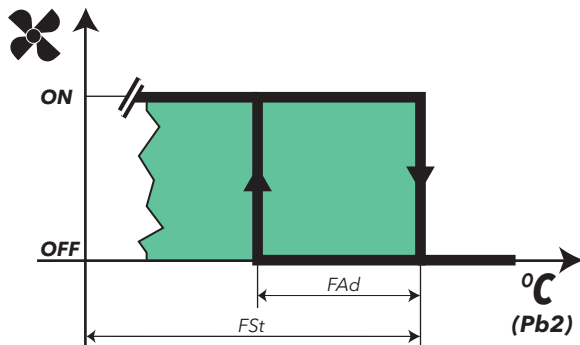
## Fan operation in duty cycle

The fans operate in duty cycle mode if the value read by probe Pb2 (evaporator/fans) is less than the value of parameter **FSt**.

Depending on whether the controller is in day or night mode, fan operation depends on the parameters **Fon** and **FoF** (day) or **Fnn** and **FnF** (night):

| Fon / Fnn | FoF / FnF | Fans |
|---|---|---|
| 0 | 0 | Off |
| 0 | ≠0 | Off |
| ≠0 | 0 | On and steady |
| ≠0 | ≠0 | Duty cycle |

**Duty-cycle control diagram (Day)**
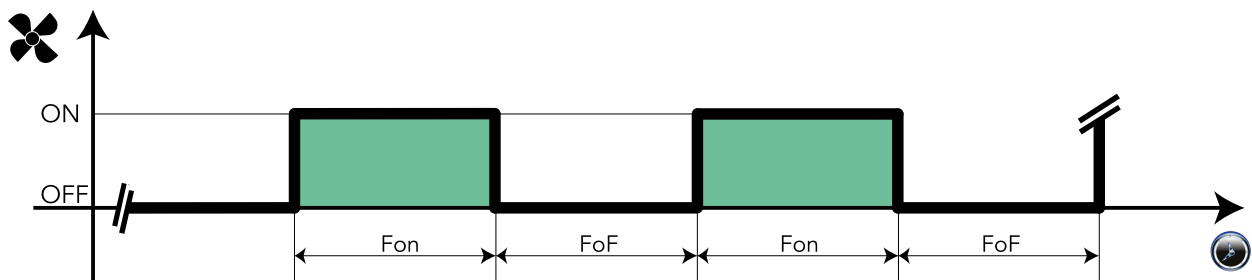


**Duty-cycle control diagram (Night)**
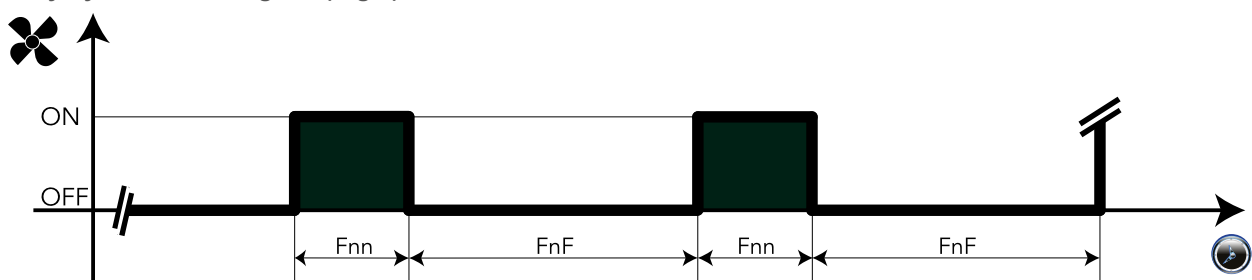


## Fan function during defrost

Operation depends on parameter **dFd**:

| dFd | Fans |
|---|---|
| **y** | Off |
| **n** | Temperature regulation or duty cycle |

**Note**: to disable the fans during a defrost cycle with electrical heaters it is necessary to set **dFd** = y.In fact, the compressor is stopped during the defrost cycle but the fans work as if the compressor were on.

## Fan function during coil drainage

During drain cycle, the fans remain stopped for the time set in the **dt** parameter.

**Note**: if **Fdt** is greater than **dt** the fans remain stopped for the time set in **Fdt**.

## Post-ventilation

The **FdC** parameter delays the shutdown of the fans after the compressor has stopped.If FdC = 0 the function is disabled.

## Parameters

| Parameter | Description |
|---|---|
| **FSt** | Evaporator fans block temperature |
| **Fdt** | Evaporator fan activation delay after defrost cycle |
| **dFd** | Evaporator fans disabling during defrost time |
| **FCO** | Evaporator fans operating mode |
| **FAd** | Evaporator fans activation differential |
| **dt** | Coil drainage time |
| **Fon** | Evaporator fans ON time in duty cycle day mode |
| **FoF** | Evaporator fans OFF time in duty cycle day mode |
| **Fnn** | Evaporator fans ON time in duty cycle night mode |
| **FnF** | Evaporator fans OFF time in duty cycle night mode |
| **ESF** | Night mode activation (Night) |

# Auxiliary output

**Note**: only IDPlus 971/974 -HC.

## Set an auxiliary output

To set a relay as an auxiliary output AUX, set one of the parameters of outputs **H21**, **H22** or **H23** to 5 (only IDPlus 974 -HC).

## Regulator activation

The regulator can be activated in one of the following modes:

- button
- function
- digital input

## Control the auxiliary output by button

Associate the ⊗ or ⊗ button with the opening/closing of the relay.To do this, set the **H31**(⊗) or **H32**(⊗) parameter to 2.

**Note**: the status of the relay is maintained even after a blackout, unless its operation depends on the status of the digital input (**H11** or **H12** = 3).

The regulator is not active during power-up or standby.In the latter case, **OFF** appears on the display.

## Control diagram
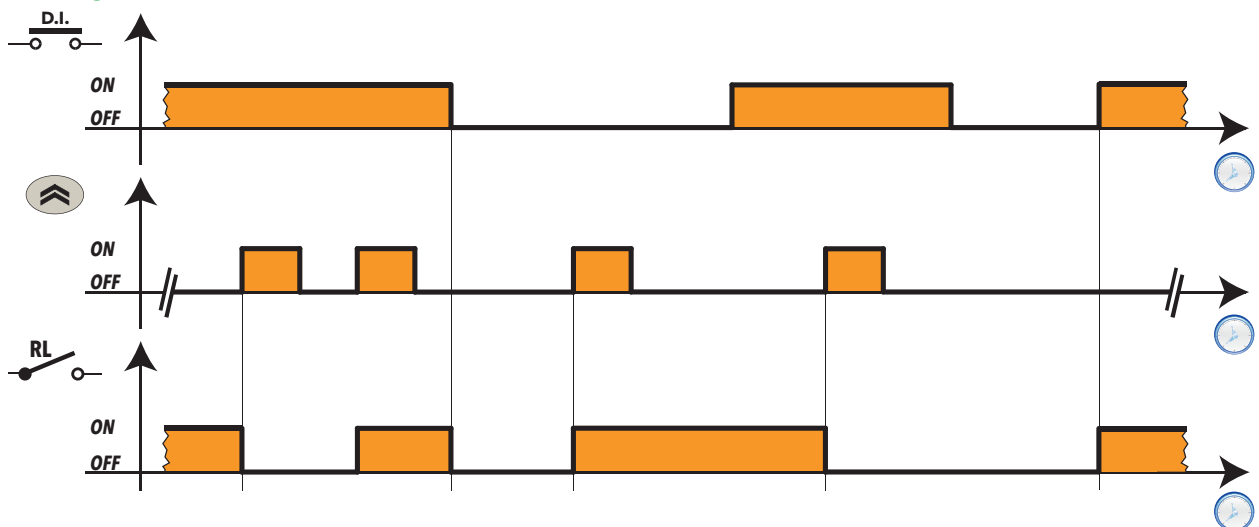
## Parameters

| Parameter | Description | Model |
|---|---|---|
| **H11** | Configuration of digital input 1 / Polarity | 971/974 -HC |
| **H12** | Configuration of digital input 2 / Polarity | 971/974 -HC |
| **H21** | Configuration of digital output 1 | 971/974 -HC |
| **H22** | Configuration of digital output 2 | 971/974 -HC |
| **H23** | Configuration of digital output 3 | 974 -HC |
| **H31** | Button configuration � | 971/974 -HC |
| **H32** | Button configuration � | 971/974 -HC |

# Pressure switch

## Introduction

A pressure switch with a diagnostic function can be connected as a digital input to the controller.

## Set up a digital input as a pressure switch

To set up a digital input as a pressure switch:

- Set one of the **H11** or **H12** digital inputs to 7 (only IDPlus 971/974 -HC).
- Set the number of permissible errors for the pressure switch input, parameter **PEn**.

    **Note**: if **PEn** = 0, the function is disabled.

## Effects of activating the pressure switch

When the pressure switch is activated, the controller performs the following operations:

- Stops compressor control.
- Registers the **nPA** label in the **AL** alarms folder with the pressure switch activation number.

The compressor can only be reactivated if the time set by the **PEt** parameter has elapsed since the pressure switch was deactivated.

The alarm is not saved and is automatically reset when the pressure returns to normal levels.

## Effects of exceeding the maximum number of pressure switch activations

If the number of pressure switch activations exceeds the maximum number set with the **PEn** parameter, in a time less than the value of the **PEI** parameter, the controller performs the following operations:

- Stops the regulation of the compressor, fans and defrost.
- The alarm icon ((●)) lights up on the display .
- The **PAL** label is displayed.
- Registers the **PA** label in the **AL** alarms folder and deletes the **nPA** label from the **AL** folder
- The alarm relay is energized, if configured.

The alarm is not saved.To reset the alarm, execute the **rAP** function in the **FPr** folder, or power off and on the controller.

## Operating modes

The **PEI** range is divided into 32 parts.If one or more activations are registered in one part, the counter is increased by one unit.

The reference point for calculating the **PEI** range, is the last activation recorded.The number of activations recorded in the 32 parts preceding the last activation is counted.

**Note**: the defrost interval is counted regularly during the period the pressure switch is activated.

**Examples**

**PEI** = 32 minutes (part = 32/32 = 1 minute)

**PEn** = 7

## Case 1

The time between the 1st and 7th intervention is 11′ < PEI (32′) **ALARM REPORTED**

## Case 2

The time between the 1st and 7th intervention is 33′ > PEI (32′) **NO ALARM REPORTED**
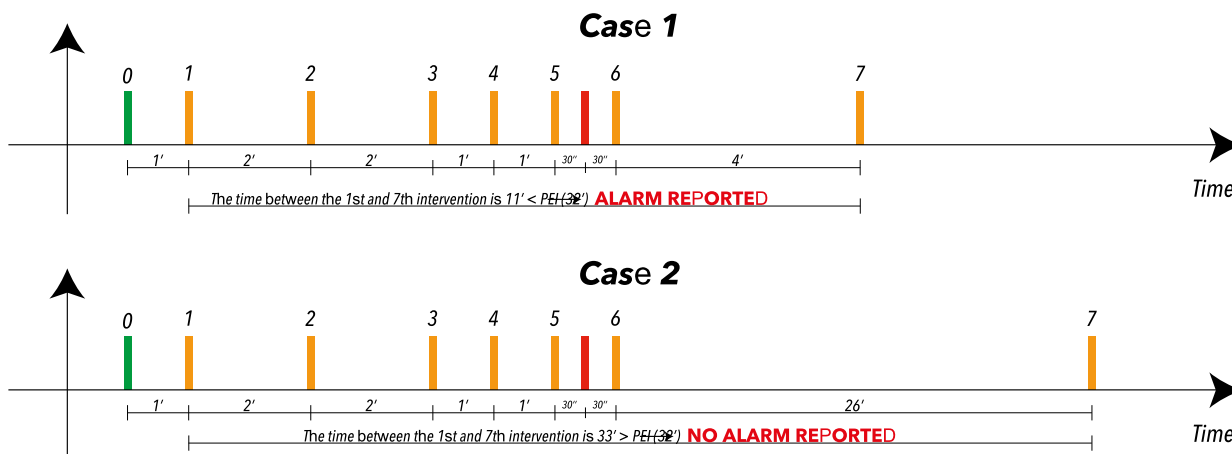
In case 1, the pressure switch alarm is reported because in the 32 minutes before the last activation, 7 activations of the pressure switch were counted.

In case 2, the pressure switch alarm is not reported because in the 32 minutes before the last activation 7 activations of the pressure switch were not counted.

### Parameters

| Parameter | Description |
|-----------|-------------|
| **PEn** | Number of activations allowed per maximum/minimum pressure switch input |
| **PEI** | Minimum/maximum pressure switch activation count range (in thirty-two parts) |
| **PEt** | Delay in activating compressor after pressure switch deactivation |

# Deep cooling cycle (DCC)

## Description

During the deep cooling cycle, the compressor works with setpoint equal to the **dCS** parameter and differential equal to **diF** parameter for a time set with the **tdc** parameter.

## Activate the deep cooling cycle

The controller can be configured to activate the deep cooling cycle in one of the following modes:

- button
- digital input

## Deep cooling cycle and defrost

When the deep cooling cycle is activated, the interval between defrosts is reset to zero and defrost is disabled.

At the end of the deep cooling cycle, after the time set with the **dcc** parameter, a defrost is forced and the count of the interval between defrosts is reset (set with the **dit** parameter).

## Operating conditions

The deep cooling cycle ends automatically and returns to the standard control if:

- There is a probe fault.
- A blackout occurs and the controller powers off and then on again.

If during the deep cooling cycle, the **dCS**, **tdc** and **dcc** parameters are changed, the cycle operation is recalculated using the new values set.

## Control diagram
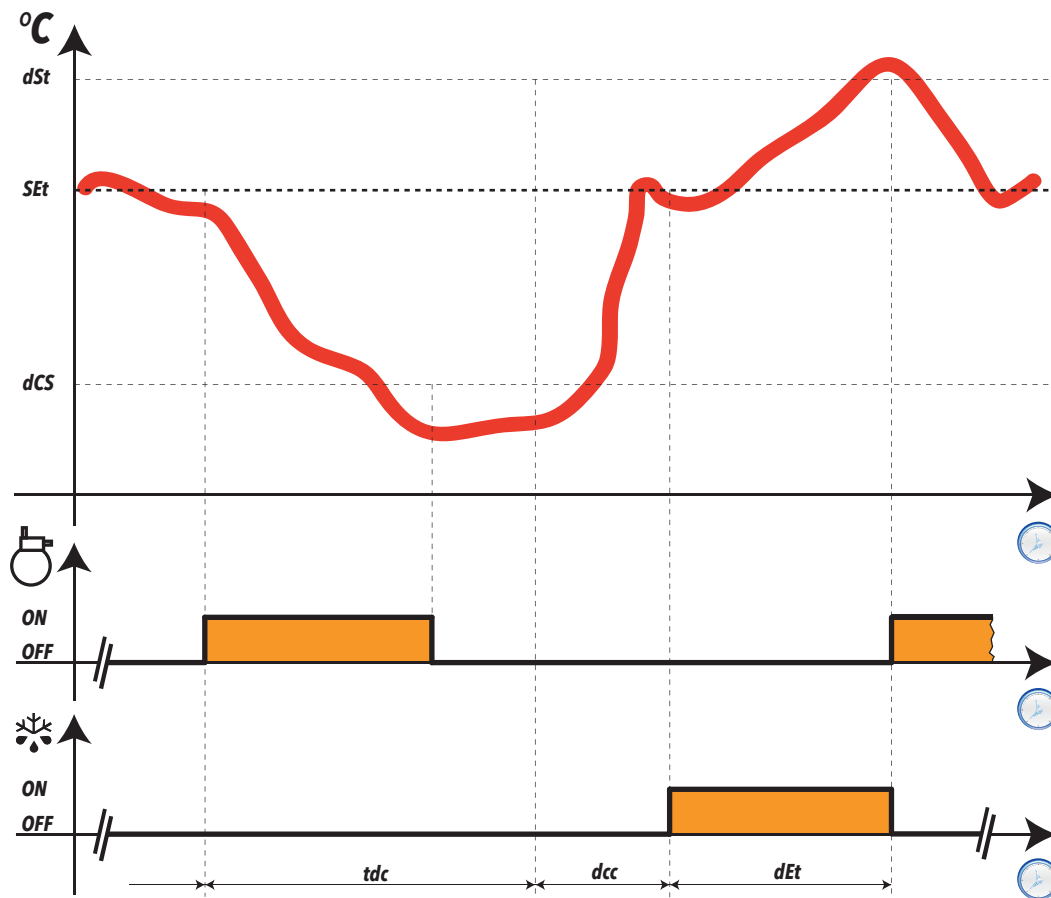


## Alarm operation during the deep cooling cycle

During the deep cooling cycle, the temperature alarms are disabled.Normal management is restored at the end of the cycle.

## Parameters

| Parameter | Description | Models |
|-----------|-------------|--------|
| dSt | Defrost end temperature (determined by probe Pb2). | 971/974 - HC |
| dit | Interval between two consecutive defrost cycles | All |
| dEt | Defrost timeout. Determines the maximum defrost duration. | All |
| dCS | Deep cooling cycle setpoint | All |
| diF | Differential setpoint | All |
| tdc | Deep cooling cycle duration | All |
| dcc | Defrost delay after a deep cooling cycle | All |

# Door switch

## Description

A door switch can be connected as a digital input to the controller to deactivate the compressor and/or fans immediately or after a time set by the **dCO** parameter.

## Set up a digital input as a door switch

To set a digital input as a door switch, set one of the parameters of the **H11** or **H12** digital inputs to 4 (only IDPlus 971/974 -HC).

## Operating modes

The operation of the controller at the opening of the door switch depends on the **dOd**, **dAd** and **dCO** parameters:

| dOd | dCO | Fans | Compressor |
|---|---|---|---|
| 0 = function disabled | -- | On and steady | On and steady |
| 1 = disable fans (FAN) | -- | Off | On and steady |
| 2 = disable compressor (COMP) | 0 | On and steady | Off |
| 2 = disable compressor (COMP) | > 0 | On and steady | Power-off after the time **dCO** |
| 3 = disabling compressor and fans (COMP and FAN) | 0 | Off | Off |
| 3 = disabling compressor and fans (COMP and FAN) | > 0 | Off | Power-off after the time **dCO** |

## Door switch and defrost status

If the door is opened during a defrost cycle, the defrost cycle continues.

## Parameters

| Parameter | Description |
|---|---|
| **dOd** | Powering off utilities on activation of the digital input set for the door switch |
| **dAd** | Activation delay for digital inputs |
| **OAO** | Alarm report delay after digital input disabling (door closing) |
| **tdO** | Delay time in door open alarm activation |
| **dCO** | Compressor power off delay from door switch |

# Standby

## Description

The standby function allows the controller to be kept powered and to have all the utilities powered-off and the alarms disabled.

## Activate the standby function

The controller can be configured to activate the standby function in one of the following modes:

- prolonged pressure on ⏻ button, only out of menus
- digital input.

## Operating modes

When the standby function is activated, **OFF** appears on the display and all relays are de-energized except for the AUX auxiliary output.

When exiting the standby function, the temperature alarm is disabled for the time set by the **PAO** parameter, the outputs are deactivated for the time set by the **OdO** parameter.The counters of the **PAO** and **OdO** parameters are reset each time the controller is powered-off.

If the standby function was active when the controller was powered off (due to either a blackout or a voluntary shutdown), it is active when the controller is powered on again, too.

## Parameters

| Parameter | Description |
|---|---|
| **PAO** | Alarm disabling after power-on |
| **OdO** | Output activation delay after power-on |
| **OAO** | High and low temperature alarms disabling time after door closing |

# Diagnostics

## Alarms and signals

### Introduction

All alarms are reset automatically when their cause is removed, except for the pressure switch and HACCP alarms, which are reset using the functions **rAP** and **rES**.

### Detection of an alarm condition

In the presence of an alarm condition, the alarm icon (●) is on and steady.If present and enabled, the buzzer and alarm relay are activated also.

**Note**: if an alarm is being disabled (parameters in the **AL**folder), the alarm is not reported.

Except for faulty probe alarms, all other alarms are reported with the corresponding label in the **AL** folder in the "Machine Status" menu.

### Silencing the buzzer

Press any button or use the menu function: the buzzer is muted, the alarm icon (●) flashes and the alarm relay is de-energized.

### Alarm Legend

| Alarm | Description | Buzzer and alarm relay | Cause | Effects | Solutions |
|-------|-------------|------------------------|-------|---------|-----------|
| E1 | Probe Pb1 in error | Active | • Values read outside operating range<br>• Probe faulty / short circuit / open | • Display **E1**<br>• Alarm icon (●) permanently on<br>• Disabling maximum/minimum alarm regulator<br>• Compressor operation based on parameters **Ont** and **OFt.** | • Check the probe type (default NTC).<br>• Check the probe wiring.<br>• Replace probe.When the alarm condition has been removed, control continues as normal. |
| E2 | Only IDPlus 971/974 - HC.Probe Pb2 in error. | Active | • Values read outside operating range<br>• Probe error / short circuit / open | • Display **E2**<br>• Alarm icon (●) permanently on<br>• Defrost ends by time-out (**dEt**).<br>• The evaporator fans are: on (compressor ON), or are running based on the **FCO** parameter, (compressor OFF). | • Check the probe type (default NTC).<br>• Check the probe wiring.<br>• Replace probe.When the alarm condition has been removed, control continues as normal. |
| E3 | Probe Pb3 in error | Active | • Values read outside operating range<br>• Probe error / short circuit / open | • Display **E3**<br>• Alarm icon (●) permanently on<br>• No effect on control | • Check the probe type (default NTC).<br>• Check the probe wiring.<br>• Replace probe. |
| AH1 | High temperature alarm probe Pb1 | Active | Value read by Pb1 > **HAL** after time **tAO** (see "Minimum and maximum temperature alarm" on page 45) | • Registration **AH1** label in the **AL** folder<br>• No effect on control | Wait until temperature value read by Pb1 returns below (**HAL-AFd**). |
| AL1 | Low temperature alarm probe Pb1 | Active | Value read by Pb1 < **LAL** after time **tAO** (see "Minimum and maximum temperature alarm" on page 45) | • Registration **AL1** label in the **AL** folder<br>• No effect on control | Wait until temperature value read by Pb1 returns above (**LAL+AFd**). |

| Alarm | Description | Buzzer and alarm relay | Cause | Effects | Solutions |
|---|---|---|---|---|---|
| **EA** | External alarm | Active | Activation of the digital input (**H11** = ±5) | • Registration **EA** label in the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on<br>• Regulation locked if *rLO* = y | Check and remove the external cause that triggered the alarm on the digital input. |
| **OPd** | Door open alarm | Active | Activation of the digital input (**H11** = ±4) for a time greater than **tdO** | • Registration **Opd** label in the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on<br>• Regulator lock, based on the parameter **dOd** | • Close the door.<br>• Delay function defined by **OAO** |
| **Ad2** | Defrost due to timeout | Not active | End of defrost cycle due to timeout rather than due to defrost end temperature being detected by Pb2 | • Registration **Ad2** label in the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on | Wait for the next defrost cycle for automatic reset. |
| **COH** | Overheating alarm | Active | Value set by parameter **SA3** exceeded | • Display of label **COH**<br>• Alarm icon $((\bullet))$ permanently on<br>• Compressor control locked | Wait for the temperature to return to a value of **SA3** (setpoint) minus **dA3** (differential). |
| **nPA** | Pressure switch alarm | Not active | Activation of pressure switch alarm by general pressure reading | If the number **n** for pressure switch activations is less and **PEn**:<br>• Registration **nPA** label in the **AL** folder with the pressure switch activation number<br>• Compressor control locked | Check and remove the cause that triggered the alarm on the digital input (automatic reset). |
| **PAL** | Pressure switch alarm | Active | Activation of pressure switch alarm by general pressure reading | If the number **N** for pressure switch activation is **N** = **PEn**:<br>• Display label **PAL**<br>• Registration **PA** label in the **AL** folder and deletion of the **nPA** label from the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on<br>• Compressor control, fans and defrost locked | • Power-off and -on the controller<br>• In the function folder select **rAP** (manual reset) to reset the alarms. |
| **HC n** | Maximum/minimum Pb3 value outside the range | Based on **H50** | Save the maximum/minimum Pb3 value reached when it falls outside the **SLH**... **SHH** range.<br>**n** represents the sequential number of outputs. | • Registration **HC n** label in the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on<br>• No effect on control | **Note**: n from 1 to 8.<br>If **n** > 8, the **HC8** folder flashes and the system overwrites the folders from **n** = 1. |
| **tC n** | Pb3 dwell time out-of-range | Based on **H50** | Save the Pb3 dwell time out-of-range value **SLH**...**SHH**.<br>**n** represents the sequential number of outputs. | • Registration **tC n** label in the **AL** folder<br>• Alarm icon $((\bullet))$ permanently on<br>• No effect on control | **Note**: n can assume the values 1 to 8.<br>If **n** > 8, folder **HC8** will blink and the system will overwrite the folders starting from **n** = 1. |
| **bC n** | Value read by Pb3 on return from a blackout | Based on **H50** | Save value read by Pb3 on return from a blackout.<br>**n** represents the sequential number of blackouts that have occurred. | • Registration folder in the **AL** folder<br>• No effect on control | **Note**: n can assume the values 1 to 8.<br>If **n** > 8, folder **bC8** will blink and the system will overwrite the folders starting from **n** = 1. |
| **bt n** | Pb3 dwell time out-of-range during a blackout | Based on **H50** | Saves the Pb3 dwell time out of range during a blackout.<br>**n** represents the sequential number of blackouts that have occurred. | • Registration **bt n** label in the **AL** folder. The contained value is 0 if the value of Pb3 has remained within the range; if it is other than 0, the value read has gone outside of the range.<br>• No effect on control | **Note**: n can assume the values 1 to 8.<br>If **n** > 8, folder **bC8** will blink and the system will overwrite the folders starting from **n** = 1. |

# Minimum and maximum temperature alarm

## Introduction

During a defrost cycle, high and low temperature alarms are overridden. Occurrence of this alarm does not effect any regulation in progress.

## Description

The alarm works according to the temperature read by the Pb1 ambient probe.The accepted temperature range limits are set with the parameters **HAL**...**LAL**.

## Alarm codes

| Code | Description |
|---|---|
| **AH1** | High temperature alarm |
| **AL1** | Low temperature alarm |

## Absolute or relative temperature values

Depending on the value of the **Att** parameter, the temperature is expressed by an absolute or a relative value (differential compared to the setpoint):

| Value of Att | Label | Description |
|---|---|---|
| **0** | **Ab** | Absolute values. The values of **HAL** and **LAL** must have their sign. |
| **1** | **rE** | Relative values. **HAL** > 0 and **LAL** < 0. |

## Alarm conditions

| Value of Att | Temperature read by Pb1 | Alarm generated |
|---|---|---|
| **0** | ≥ **HAL** | Maximum temperature |
| | ≤ **LAL** | Minimum temperature |
| **1** | ≥ (**SEt** + **HAL**) | Maximum temperature |
| | ≤ (**SEt** + **LAL**) | Minimum temperature |

## Alarm reset conditions

| Value of Att | Temperature read by Pb1 | Alarm generated |
|---|---|---|
| **0** | ≤ (**HAL** - **AFd**) | Maximum temperature |
| | ≥ (**LAL** + **AFd**) | Minimum temperature |
| **1** | ≤ (**SEt** + **HAL** - **AFd**) | Maximum temperature |
| | ≥ (**SEt** + **LAL** + **AFd**) | Minimum temperature |

## Operating diagrams

**Operation with Att=0**
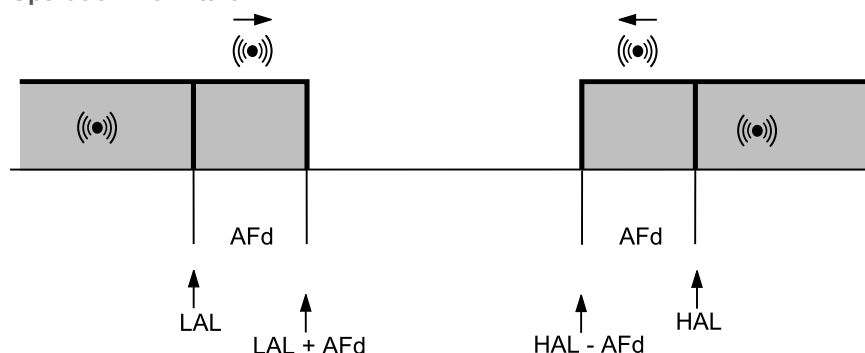
**Operation with Att=1**
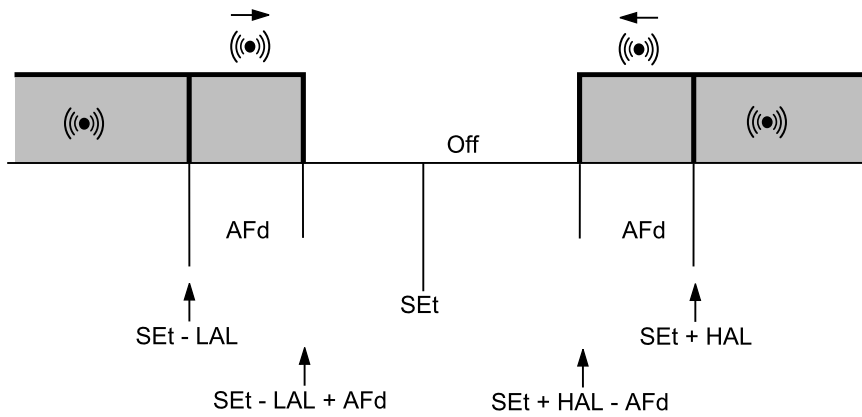


## Alarm parameters

| Parameter | Description |
|-----------|-------------|
| **Att** | Expression modes for **HAL** and **LAL** values (absolute or relative) |
| **Afd** | Alarm activation differential |
| **HAL** | Maximum temperature limit |
| **LAL** | Minimum temperature limit |
| **PAO** | Temperature alarm disable time from power-on |
| **dAO** | Temperature alarm disabling time after defrost cycle |
| **OAO** | High and low temperature alarms disable time after door closing |
| **tAO** | Temperature alarms delay time |

# User parameters

## IDPlus 961 -HC parameters

### User menu

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| SEt | Temperature control setpoint | LSE...HSE | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | -2.0 |
| diF | Compressor relay activation differential | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 0.1 |
| HSE | Maximum value settable for setpoint | LSE...320 | °C/°F | 99.0 | 99.0 | 140 | 140 | 5.0 |
| LSE | Minimum value settable for setpoint | -67.0...HSE | °C/°F | -50.0 | -50.0 | -55.0 | -55.0 | -10.0 |
| dit | Interval between the start of two consecutive defrost cycles | 0...250 | hours | 6 | 6 | - | - | 8 |
| dEt | Defrost timeout. | 1...250 | min | 30 | 30 | - | - | 30 |
| HAL | Maximum temperature alarm | LAL...320 | °C/°F | 50.0 | 50.0 | 150 | 150 | 50.0 |
| LAL | Minimum temperature alarm | -67.0...HAL | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| SA3 | Probe 3 alarm setpoint | -67.0...320 | °C/°F | - | - | - | - | 70.0 |
| LOC | Basic commands edit lock | n/y | flag | n | n | n | n | n |
| PS1 | Password 1: if PS1 ≠ 0 is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| CA1 | Temperature value to be added to the value of Pb1 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| CA3 | Temperature value to be added to the value of Pb3 | -12.0...12.0 | °C/°F | - | - | - | - | 0.0 |
| ddL | Display mode during defrost. **0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start; **2** = display the **dEF** label | 0/1/2 | num | 0 | 0 | - | - | 0 |
| Ldd | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | - | - | 30 |
| H43 | Probe 3 present.**n**(0) = not present; **y**(1) = present | n/y | flag | | | - | - | y |
| rEL | Controller version.Read-only parameter | / | | / | / | / | / | / |
| tAb | Reserved: read-only parameter | / | | / | / | / | / | / |
| PA2 | Folder that permits access to the "Installer" menu.If PS2 ≠ 0, input requested. | | | | | | | |

Note: among the "User" menu parameters is **PA2**, which gives access to the "Installer" menu.

Note: to reset the HACCP alarms use the **rES** function in the **FnC** folder of the installer parameters.

Note: for a complete list of the parameters, see "Installer menu" below.

### Installer menu

Below are the parameters that can be set from the "Installer" menu.

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| SEt | Control setpoint with range between the minimum **LSE** setpoint and the maximum **HSE** setpoint.The setpoint value is set in the "Machine Status" menu. | LSE...HSE | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | -2.0 |
| **CP (Compressor)** | | | | | | | | |
| diF | Compressor relay activation differential; the compressor stops when the setpoint value is reached (as indicated by the control probe) and restarts at a temperature value equal to the setpoint plus the differential value. **Note**: always other than 0. | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 0.1 |
| HSE | Maximum setpoint value | LSE...320 | °C/°F | 99.0 | 99.0 | 140 | 140 | 5.0 |
| LSE | Minimum setpoint value | -67.0...HSE | °C/°F | -50.0 | -50.0 | -55.0 | -55.0 | -10.0 |
| OSP | Temperature value to be added to the setpoint if reduced set enabled (Economy function) | -30.0...30.0 | °C/°F | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 |
| Hc | The regulator implements either cold operation (set "**C**(0)") or for hot (set "**H**(1)") | C/H | flag | C | C | C | H | C |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| **Ont** | Regulator switch on time for a probe error:<br><br>• if **Ont** = 1 and **OFt** = 0 compressor is always on<br>• if **Ont** = 1 and **OFt** > 0 compressor in duty cycle | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **OFt** | Regulator power-off time for a probe error:<br><br>• if **OFt** = 1 and **Ont** = 0 regulator always off<br>• if **OFt** = 1 and **Ont** > 0 regulator in duty cycle | 0...250 | min | 1 | 1 | 1 | 1 | 1 |
| **dOn** | Compressor relay activation delay time after request | 0...250 | s | 0 | 0 | 0 | 0 | 0 |
| **dOF** | Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **dbi** | Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **OdO (!)** | Delay in activating outputs after the controller is powered on or after a power failure.**0** = not active | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **dCS** | "Deep Cooling Cycle" setpoint | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **tdC** | "Deep Cooling Cycle" duration | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **dcc** | Defrost activation delay after a "Deep Cooling Cycle" | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **dEF (Defrost)** | | | | | | | | |
| **dit** | Interval between the start of two defrost cycles | 0...250 | hours | 6 | 6 | 0 | 0 | 8 |
| **dCt** | Selection of the defrost interval count mode<br><br>**0** = compressor operating hours (DIGIFROST® method); defrost active only when the compressor is on; **1** = Real Time - controller operating hours; defrost count is always active when the machine is on and starts each time it is powered on; **2** = compressor stop.A defrost cycle runs at each stop (parameter **dty**). | 0/1/2 | num | 1 | 1 | 1 | 1 | 1 |
| **dOH** | Defrost cycle enabling delay from request | 0...59 | min | 0 | 0 | 0 | 0 | 0 |
| **dEt** | Defrost timeout.Determines the maximum defrost duration. | 1...250 | min | 30 | 30 | 1 | 1 | 30 |
| **dPO** | Activate defrost request at power on, if the temperature measured by Pb2 allows it.**n**(0) = no; **y**(1) = yes | n/y | flag | n | n | n | n | n |
| **AL (Alarms)** | | | | | | | | |
| **Att** | Set the absolute or relative value for the **HAL** and **LAL** parameters.<br>**Att** = 0: absolute<br>**Att** = 1: relative | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| **AFd** | Alarm differential. | 1.0...50.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **HAL** | Maximum temperature alarm.<br><br>Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal. | **LAL**...320 | °C/°F | 50.0 | 50.0 | 150 | 150 | 50.0 |
| **LAL** | Minimum temperature alarm.<br><br>Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal. | -67.0...**HAL** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| **PAO** | Alarm exclusion time after controller is powered on following a power failure. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| **dAO** | Temperature alarm override time after defrost. | 0...999 | min | 0 | 0 | 0 | 0 | 0 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| OAO | Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| tdO | Delay in door open alarm activation. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| tAO | Time delay for temperature alarm indication. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| rLO | An external alarm blocks the regulators. **n**(0) = not blocked; **y**(1) = blocked | n/y | flag | n | n | n | n | n |
| SA3 | Probe 3 alarm Setpoint. | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 70.0 |
| dA3 | Probe 3 alarm differential. | 1.0...50.0 | °C/°F | 1.0 | 1.0 | 1.0 | 1.0 | 10.0 |
| **Lit (Lamps and digital inputs)** | | | | | | | | |
| dOd | Digital inputs powers off utilities: **0** = disabled; **1** = disables the fans; **2** = disables the compressor; **3** = disables fans and compressor | 0/1/2/3 | num | 0 | 0 | 0 | 0 | 0 |
| dAd | Activation delay for digital input | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| dCO | Compressor enabling delay from acknowledgement | 0...255 | min | 1 | 1 | 1 | 1 | 1 |
| **PrE (Pressure switch)** | | | | | | | | |
| Pen | Number of errors allowed per maximum/minimum pressure switch input | 0...15 | num | 0 | 0 | 0 | 0 | 0 |
| PEI | Minimum/maximum pressure switch error count interval. | 1...99 | min | 1 | 1 | 1 | 1 | 1 |
| PEt | Delay in activating compressor after pressure switch deactivation | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **Add (Communication)** | | | | | | | | |
| PtS | Selection of communication protocol. **t**(0) = Televis; **d**(1) = Modbus | t/d | flag | t | t | t | t | t |
| dEA | Device index within the family | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| FAA | Device family. The pair of values **FAA** and **dEA** represent the controller network address and is indicated with the following format: **FF.DD** (where FF = **FAA** and DD = **dEA**). | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| Pty | MODBUS parity bit. **n**(0) = none; **E**(1) = even; **o**(2) = odd | n/E/o | num | n | n | n | n | n |
| StP | Modbus stop bit | 1b/2b | flag | 1b | 1b | 1b | 1b | 1b |
| **DiS (Display)** | | | | | | | | |
| LOC | Setpoint edit lock. See corresponding paragraph. It is still possible to open parameter programming to change parameters, including the status of this parameter to unlock the button pad **n**(0) = no; **y**(1) = yes. | n/y | flag | n | n | n | n | n |
| PS1 | When enabled (**PS1**≠0), it is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| PS2 | When enabled (**PS2**≠0), it is the key to access the installer parameters | 0...250 | num | 15 | 15 | 15 | 15 | 15 |
| ndt | Display with decimal point. **n**(0) = no; **y**(1) = yes; | n/y | flag | y | y | y | y | y |
| CA1 | Positive or negative temperature value to be added to the value of Pb1. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| CA3 | Positive or negative temperature value to be added to the value of Pb3. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ddL | Display mode during defrost. **0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start and until the setpoint is reached; **2** = display the **dEF** label during defrost and until the setpoint is reached. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| Ldd | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | 30 | 30 | 30 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| dro | Select the unit of measurement used when displaying the temperature recorded by the probes.(**0** = °C, **1** = °F).<br>**Note**: the change from °C to °F or vice versa does not change the values of **SEt**, **diF**, etc. (example **SEt** = 10°C becomes 10°F) | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| ddd | Selects type of value to display.<br>**0** = setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3 | 0/1/2/3 | num | 1 | 1 | 1 | 1 | 1 |
| **HCP (HACCP)** | | | | | | | | |
| SHH | Maximum HACCP alarm signals threshold | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| SLH | Minimum HACCP alarm signals threshold | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| drA | Minimum dwell time in critical area for the event to be recorded.After this time, a HACCP alarm is saved and reported. | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| drH | HACCP alarm reset time from last reset | 0...250 | hours | 0 | 0 | 0 | 0 | 0 |
| H50 | Enable HACCP and alarm relay functions.<br>**0** = HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| H51 | HACCP alarm override time | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **CnF (Configuration)** | | | | | | | | |
| H00 | Select probe type.**0** = PTC; **1** = NTC; **2** = Pt1000 | 0/1/2 | flag | 1 | 1 | 1 | 1 | 1 |
| H11 | Configuration of digital input 1/polarity.<br>**0** = disabled; **±1** = defrost; **±2** = reduced set; **±3** = auxiliary; **±4** = door switch; **±5** = external alarms; **±6** = standby; **±7** = pressure switch; **±8** = Deep Cooling; **±9** = disable saving HACCP alarms.<br>**Note**:<br>• the "+" sign indicates that the input is active if the contact is closed.<br>• the "-" sign indicates that the input is active if the contact is open. | -9...+9 | num | 0 | 0 | 0 | 0 | 0 |
| H21 | Configuration of digital output 1:<br>**0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarms; **5** = AUX; **6** = standby | 0...6 | num | 1 | 1 | 1 | 1 | 1 |
| H22 | Configuration of digital output 1 (❄).Same as **H21**. | 0...6 | num | 1 | 1 | 1 | 1 | 1 |
| H31 | Configuration of ⌃ button.<br>**0** = disabled; **1** = defrost; **2** = auxiliary; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = deep cooling cycle activation | 0...7 | num | 1 | 1 | 0 | 0 | 1 |
| H32 | Configuration of ⌄ button.Same as **H31**. | 0...7 | num | 0 | 0 | 0 | 0 | 0 |
| H43 | Probe Pb3 present.**n**(0) = not present; **y**(1) = present | n/y | flag | n | n | n | n | y |
| rEL | Controller version.Read-only parameter. | / | / | / | / | / | / | / |
| tAb | Reserved: read-only parameter | / | / | / | / | / | / | / |
| **FPr (CopyCard)** | | | | | | | | |
| UL | Transfer programming parameters from controller to Copy Card | / | / | / | / | / | / | / |
| Fr | Format CopyCard.Deletes all the data entered in the CopyCard.<br>**Note**: use of the **Fr** parameter causes the permanent loss of the data entered.This operation cannot be undone. | / | / | / | / | / | / | / |
| **FnC (Functions)** | | | | | | | | |
| rAP | Reset pressure switch alarms | / | / | / | / | / | / | / |
| rES | Reset HACCP alarms | / | / | / | / | / | / | / |

**Note**: If one or more parameters in the **CnF** folder, or marked with a **(!),** are changed, the controller must be powered off and then powered on again to ensure correct operation.

# IDPlus 971 -HC parameters

## User menu

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|-----------|-------------|-------|-----|---------|-----|-----|-----|-----|
| **SEt** | Temperature control setpoint | **LSE**...**HSE** | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **diF** | Compressor relay activation differential | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **HSE** | Maximum value settable for setpoint | **LSE**...320 | °C/°F | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 |
| **LSE** | Minimum value settable for setpoint | -67.0...**HSE** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| **dty** | Type of defrost. **0** = electric defrost; **1** = defrost on reverse cycle; **2** = defrost independent of compressor. | 0/1/2 | num | 0 | 0 | 0 | - | - |
| **dit** | Interval between the start of two consecutive defrost cycles | 0...250 | hours | 6 | 6 | 6 | 6 | 6 |
| **dEt** | Defrost timeout. | 1...250 | min | 30 | 30 | 30 | 30 | 30 |
| **dSt** | Defrost end temperature (determined by probe Pb2). | -67.0...320 | °C/°F | 8.0 | 8.0 | - | 8.0 | - |
| **FSt** | Fans disabling temperature. | -67.0...320 | °C/°F | - | - | - | 50.0 | - |
| **Fdt** | Fan activation delay after a defrost cycle. | 0...250 | min | - | - | - | 0 | - |
| **dt** | Coil drainage time. | 0...250 | min | - | - | - | 0 | - |
| **dFd** | Allows exclusion of the evaporator fans to be selected or not selected during defrosting. | n/y | flag | - | - | - | y | - |
| **HAL** | Maximum temperature alarm | **LAL**...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| **LAL** | Minimum temperature alarm | -67.0...**HAL** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| **dOd** | Digital input for switching off utilities. **0** = disabled; **1**= disables the fans; **2** = disables the compressor; **3** = disables the fans and the compressor | 0/1/2/3 | num | - | - | - | 0 | - |
| **dCO** | Compressor enabling delay from acknowledgement. | 0...255 | min | - | - | - | 1 | - |
| **LOC** | Basic commands edit lock | n/y | flag | n | n | n | n | n |
| **PS1** | Password 1: if **PS1** ≠ 0 is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| **CA1** | Temperature value to be added to the value of Pb1 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CA2** | Temperature value to be added to the value of Pb2 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | - | 0.0 | - |
| **ddL** | Display mode during defrost. **0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start; **2** = display the **dEF** label | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| **Ldd** | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | 30 | 30 | 30 |
| **H42** | Evaporator probe (Pb2) present.**n**(0) = not present; **y**(1) = present | n/y | flag | y | y | - | y | - |
| **rEL** | Controller version.Read-only parameter | / | / | / | / | / | / | / |
| **tAb** | Reserved: read-only parameter | / | / | / | / | / | / | / |
| **PA2** | Folder that permits access to the "Installer" menu.If **PS2** ≠ 0, input requested. | | | | | | | |

**Note**: among the "User" menu parameters is **PA2**, which gives access to the "Installer" menu.
**Note**: to reset the HACCP alarms use the **rES** function in the **FnC** folder of the installer parameters.
**Note**: for a complete list of the parameters, see "Installer menu" below.

## Installer menu

Below are the parameters that can be set from the "Installer" menu.

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| SEt | Control setpoint with range between the minimum **LSE** setpoint and the maximum **HSE** setpoint. The setpoint value is set in the "Machine Status" menu. | **LSE**...**HSE** | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CP (Compressor)** | | | | | | | | |
| diF | Compressor relay activation differential; the compressor stops when the setpoint value is reached (as indicated by the control probe) and restarts at a temperature value equal to the setpoint plus the differential value. **Note**: always other than 0. | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| HSE | Maximum setpoint value | **LSE**...320 | °C/°F | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 |
| LSE | Minimum setpoint value | -67.0...**HSE** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| OSP | Temperature value to be added to the setpoint if reduced set enabled (Economy function) | -30.0...30.0 | °C/°F | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 |
| Hc | The regulator implements either cold operation (set "**C**(0)") or for hot (set "**H**(1)") | C/H | flag | C | C | C | C | C |
| Ont | Regulator switch on time for a probe error:<br>• if **Ont** = 1 and **OFt** = 0 compressor is always on<br>• if **Ont** = 1 and **OFt** > 0 compressor in duty cycle | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| OFt | Regulator power-off time for a probe error:<br>• if **OFt** = 1 and **Ont** = 0 regulator always off<br>• if **OFt** = 1 and **Ont** > 0 regulator in duty cycle | 0...250 | min | 1 | 1 | 1 | 1 | 1 |
| dOn | Compressor relay activation delay time after request | 0...250 | s | 0 | 0 | 0 | 0 | 0 |
| dOF | Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dbi | Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| OdO (!) | Delay in activating outputs after the controller is powered on or after a power failure. **0** = not active | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dCS | "Deep Cooling Cycle" setpoint | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| tdC | "Deep Cooling Cycle" duration | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| dcc | Defrost activation delay after a "Deep Cooling Cycle" | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **dEF (Defrost)** | | | | | | | | |
| dty | Type of defrost.<br>**0** = electric defrost- compressor OFF during defrost; **1** = reverse cycle defrost (hot gas); compressor on during defrost; **2** = "Free" mode defrost; compressor independent defrost. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| dit | Interval between the start of two defrost cycles | 0...250 | hours | 6 | 6 | 6 | 6 | 6 |
| dCt | Selection of the defrost interval count mode<br>**0** = compressor operating hours (DIGIFROST® method); defrost active only when the compressor is on; **1** = Real Time - controller operating hours; defrost count is always active when the machine is on and starts each time it is powered on; **2** = compressor stop. A defrost cycle runs at each stop (parameter **dty**). | 0/1/2 | num | 1 | 1 | 1 | 1 | 1 |
| dOH | Defrost cycle enabling delay from request | 0...59 | min | 0 | 0 | 0 | 0 | 0 |
| dEt | Defrost timeout. Determines the maximum defrost duration. | 1...250 | min | 30 | 30 | 30 | 30 | 30 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| dSt | Defrost end temperature (determined by probe Pb2). | -67.0...320 | °C/°F | 8.0 | 8.0 | 50.0 | 8.0 | 50.0 |
| dPO | Activate defrost request at power on, if the temperature measured by Pb2 allows it.**n**(0) = no; **y**(1) = yes | n/y | flag | n | n | n | n | n |
| **Fans** | | | | | | | | |
| FSt | Fan stop temperature; a value read by the evaporator probe. | -67.0...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| FAd | Fan activation intervention differential (parameter **FSt**). | 1.0...50.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Fdt | Fan activation delay after a defrost cycle. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dt | Coil drainage time. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dFd | Allows exclusion of the evaporator fans to be selected or not selected during defrosting.**n** (0) = no; **y**(1) = yes (fan disabled or powered off). | n/y | flag | y | y | y | y | y |
| FCO | Evaporator fans operating mode. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |

| FCO | Fans with compressor ON | Fans with compressor OFF |
|---|---|---|
| 0 | Thermostats | Off |
| 1 | Thermostats | Thermostats |
| 2 | Thermostats | Day or night duty cycle |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| Fon | Fan ON time in day duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| FoF | Fan OFF time in day duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| Fnn | Fan ON time in night duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| FnF | Fan OFF time in night duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| ESF | Activation of "night" mode.**n**(0) = no; **y**(1) = yes | n/y | flag | n | n | n | n | n |
| **AL (Alarms)** | | | | | | | | |
| Att | Set the absolute or relative value for the **HAL** and **LAL** parameters. **Att** = 0: absolute **Att** = 1: relative | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| AFd | Alarm differential. | 1.0...50.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| HAL | Maximum temperature alarm. Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal. | **LAL**...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LAL | Minimum temperature alarm. Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal. | -67.0...**HAL** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| PAO | Alarm exclusion time after controller is powered on following a power failure. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| dAO | Temperature alarm override time after defrost. | 0...999 | min | 0 | 0 | 0 | 0 | 0 |
| OAO | Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| tdO | Delay in door open alarm activation. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| tAO | Time delay for temperature alarm indication. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dAt | Alarm signalling end of defrost due to timeout.**n**(0) = alarms not active; **y**(1) = alarms active. | n/y | flag | n | n | n | n | n |
| rLO | An external alarm blocks the regulators.**n**(0) = not blocked; **y**(1) = blocked | n/y | flag | n | n | n | n | n |
| SA3 | Probe 3 alarm Setpoint. | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| dA3 | Probe 3 alarm differential. | 1.0...50.0 | °C/°F | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| **Lit (Lamps and digital inputs)** | | | | | | | | |
| **dOd** | Digital inputs powers off utilities: **0** = disabled; **1** = disables the fans; **2** = disables the compressor; **3** = disables fans and compressor | 0/1/2/3 | num | 0 | 0 | 0 | 2 | 0 |
| **dAd** | Activation delay for digital input | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **dCO** | Compressor enabling delay from acknowledgement | 0...255 | min | 1 | 1 | 1 | 1 | 1 |
| **PrE (Pressure switch)** | | | | | | | | |
| **Pen** | Number of errors allowed per maximum/minimum pressure switch input | 0...15 | num | 0 | 0 | 0 | 0 | 0 |
| **PEI** | Minimum/maximum pressure switch error count interval. | 1...99 | min | 1 | 1 | 1 | 1 | 1 |
| **PEt** | Delay in activating compressor after pressure switch deactivation | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **Add (Communication)** | | | | | | | | |
| **PtS** | Selection of communication protocol.**t**(0) = Televis; **d**(1) = Modbus | t/d | flag | t | t | t | t | t |
| **dEA** | Device index within the family | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| **FAA** | Device family.The pair of values **FAA** and **dEA** represent the controller network address and is indicated with the following format: **FF.DD** (where FF = **FAA** and DD = **dEA**). | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| **Pty** | MODBUS parity bit.**n**(0) = none; **E**(1) = even; **o**(2) = odd | n/E/o | num | n | n | n | n | n |
| **StP** | Modbus stop bit | 1b/2b | flag | 1b | 1b | 1b | 1b | 1b |
| **DiS (Display)** | | | | | | | | |
| **LOC** | Setpoint edit lock.See corresponding paragraph. It is still possible to open parameter programming to change parameters, including the status of this parameter to unlock the button pad **n**(0) = no; **y**(1) = yes. | n/y | flag | n | n | n | n | n |
| **PS1** | When enabled (**PS1**≠0), it is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| **PS2** | When enabled (**PS2**≠0), it is the key to access the installer parameters | 0...250 | num | 15 | 15 | 15 | 15 | 15 |
| **ndt** | Display with decimal point.**n**(0) = no; **y**(1) = yes; | n/y | flag | y | y | y | y | y |
| **CA1** | Positive or negative temperature value to be added to the value of Pb1. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CA2** | Positive or negative temperature value to be added to the value of Pb2. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CA3** | Positive or negative temperature value to be added to the value of Pb3. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **ddL** | Display mode during defrost. **0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start and until the setpoint is reached; **2** = display the **dEF** label during defrost and until the setpoint is reached. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| **Ldd** | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | 30 | 30 | 30 |
| **dro** | Select the unit of measurement used when displaying the temperature recorded by the probes.(**0** = °C, **1** = °F). **Note**: the change from °C to °F or vice versa does not change the values of **SEt**, **diF**, etc. (example **SEt** = 10°C becomes 10°F) | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| **ddd** | Selects type of value to display. **0** = setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3 | 0/1/2/3 | num | 1 | 1 | 1 | 1 | 1 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| **HCP (HACCP)** | | | | | | | | |
| **SHH** | Maximum HACCP alarm signals threshold | -67.0…320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **SLH** | Minimum HACCP alarm signals threshold | -67.0…320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **drA** | Minimum dwell time in critical area for the event to be recorded. After this time, a HACCP alarm is saved and reported. | 0…99 | min | 0 | 0 | 0 | 0 | 0 |
| **drH** | HACCP alarm reset time from last reset | 0…250 | hours | 0 | 0 | 0 | 0 | 0 |
| **H50** | Enable HACCP and alarm relay functions. **0** = HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| **H51** | HACCP alarm override time | 0…250 | min | 0 | 0 | 0 | 0 | 0 |
| **CnF (Configuration)** | | | | | | | | |
| **H00** | Select probe type. **0** = PTC; **1** = NTC; **2** = Pt1000 | 0/1/2 | flag | 1 | 1 | 1 | 1 | 1 |
| **H11** | Configuration of digital input 1/polarity. **0** = disabled; **±1** = defrost; **±2** = reduced set; **±3** = auxiliary; **±4** = door switch; **±5** = external alarms; **±6** = standby; **±7** = pressure switch; **±8** = Deep Cooling; **±9** = disable saving HACCP alarms. **Note**: <br>• the "+" sign indicates that the input is active if the contact is closed. <br>• the "-" sign indicates that the input is active if the contact is open. | -9…+9 | num | 0 | 0 | 0 | 4 | 0 |
| **H12** | Configuration of digital input 2/polarity. Same as **H11**. | -9 … +9 | num | 0 | 0 | 0 | 0 | 0 |
| **H21** | Configuration of digital output 1: **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarms; **5** = AUX; **6** = standby | 0…6 | num | 1 | 1 | 1 | 1 | 1 |
| **H22** | Configuration of digital output 2. Same as **H21**. | 0…6 | num | 2 | 2 | 2 | 3 | 4 |
| **H25** | Enable/disable buzzer. **0** = disabled; **4** = enabled; **1-2-3-5-6-7-8** = NOT USED | 0…8 | num | 0 | 0 | 0 | 0 | 4 |
| **H31** | Configuration of ⌃ button. **0** = disabled; **1** = defrost; **2** = auxiliary; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = deep cooling cycle activation | 0…7 | num | 1 | 1 | 1 | 1 | 1 |
| **H32** | Configuration of ⌄ button. Same as **H31**. | 0…7 | num | 0 | 0 | 0 | 0 | 0 |
| **H42** | Evaporator probe present. **n**(0) = not present; **y**(1) = present | n/y | flag | y | y | n | y | n |
| **H43** | Probe Pb3 present. **n**(0) = not present; **y**(1) = present | n/y | flag | n | n | n | n | n |
| **rEL** | Controller version. Read-only parameter. | / | / | / | / | / | / | / |
| **tAb** | Reserved: read-only parameter | / | / | / | / | / | / | / |
| **FPr (CopyCard)** | | | | | | | | |
| **UL** | Transfer programming parameters from controller to Copy Card | / | / | / | / | / | / | / |
| **Fr** | Format CopyCard. Deletes all the data entered in the CopyCard. **Note**: use of the **Fr** parameter causes the permanent loss of the data entered. This operation cannot be undone. | / | / | / | / | / | / | / |
| **FnC (Functions)** | | | | | | | | |
| **rAP** | Reset pressure switch alarms | / | / | / | / | / | / | / |
| **rES** | Reset HACCP alarms | / | / | / | / | / | / | / |

**Note**: If one or more parameters in the **CnF** folder, or marked with a **(!),** are changed, the controller must be powered off and then powered on again to ensure correct operation.

# IDPlus 974 -HC parameters

## User menu

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| **SEt** | Temperature control setpoint | **LSE**...**HSE** | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **diF** | Compressor relay activation differential | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **HSE** | Maximum value settable for setpoint | **LSE**...320 | °C/°F | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 |
| **LSE** | Minimum value settable for setpoint | -67.0...**HSE** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| **dty** | Type of defrost. **0** = electric defrost; **1** = defrost on reverse cycle; **2** = defrost independent of compressor. | 0/1/2 | num | 0 | 0 | 0 | - | 1 |
| **dit** | Interval between the start of two consecutive defrost cycles | 0...250 | hours | 6 | 6 | 6 | 6 | 6 |
| **dEt** | Defrost timeout. | 1...250 | min | 30 | 30 | 30 | 30 | 30 |
| **dSt** | Defrost end temperature (determined by probe Pb2). | -67.0...320 | °C/°F | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| **FSt** | Fans disabling temperature. | -67.0...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| **Fdt** | Fan activation delay after a defrost cycle. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **dt** | Coil drainage time. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **dFd** | Allows exclusion of the evaporator fans to be selected or not selected during defrosting. | n/y | flag | y | y | y | y | y |
| **HAL** | Maximum temperature alarm | **LAL**...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| **LAL** | Minimum temperature alarm | -67.0...**HAL** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| **LOC** | Basic commands edit lock | n/y | flag | n | n | n | n | n |
| **PS1** | Password 1: if **PS1** ≠ 0 is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| **CA1** | Temperature value to be added to the value of Pb1 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CA2** | Temperature value to be added to the value of Pb2 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CA3** | Temperature value to be added to the value of Pb3 | -12.0...12.0 | °C/°F | 0.0 | 0.0 | 0.0 | - | 0.0 |
| **ddL** | Display mode during defrost. **0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start; **2** = display the **dEF** label | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| **Ldd** | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | 30 | 30 | 30 |
| **SHH** | Maximum HACCP alarm signals threshold. | -50.0...150 | °C/°F | - | - | 10.0 | - | - |
| **SLH** | Minimum HACCP alarm signals threshold. | -50.0...150 | °C/°F | - | - | -10.0 | - | - |
| **drA** | Minimum dwell time in critical area for the event to be recorded. | 0...99 | min | - | - | 10 | - | - |
| **H50** | Enable HACCP and alarm relay functions. **0** = HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled. | 0/1/2 | num | - | - | 1 | - | - |
| **H51** | HACCP alarm override time. | 0...250 | min | - | - | 0 | - | - |
| **H42** | Evaporator probe (Pb2) present.**n**(0) = not present; **y**(1) = present | n/y | flag | y | y | y | y | y |
| **H43** | Probe 3 present.**n**(0) = not present; **y**(1) = present | n/y | flag | n | n | y | n | n |
| **rEL** | Controller version.Read-only parameter | / | / | / | / | / | / | / |
| **tAb** | Reserved: read-only parameter | / | / | / | / | / | / | / |
| **PA2** | Folder that permits access to the "Installer" menu.If **PS2** ≠ 0, input requested. | | | | | | | |

**Note**: among the "User" menu parameters is **PA2**, which gives access to the "Installer" menu.

**Note**: to reset the HACCP alarms use the **rES** function in the **FnC** folder of the installer parameters.

**Note**: for a complete list of the parameters, see "Installer menu" below.

## Installer menu

Below are the parameters that can be set from the "Installer" menu.

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| SEt | Control setpoint with range between the minimum **LSE** setpoint and the maximum **HSE** setpoint. The setpoint value is set in the "Machine Status" menu. | **LSE**...**HSE** | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **CP (Compressor)** | | | | | | | | |
| diF | Compressor relay activation differential; the compressor stops when the setpoint value is reached (as indicated by the control probe) and restarts at a temperature value equal to the setpoint plus the differential value.<br>**Note**: always other than 0. | 0.1...30.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| HSE | Maximum setpoint value | **LSE**...320 | °C/°F | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 |
| LSE | Minimum setpoint value | -67.0...**HSE** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| OSP | Temperature value to be added to the setpoint if reduced set enabled (Economy function) | -30.0...30.0 | °C/°F | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 |
| Hc | The regulator implements either cold operation (set "**C**(0)") or for hot (set "**H**(1)") | C/H | flag | C | C | C | C | C |
| Ont | Regulator switch on time for a probe error:<br>• if **Ont** = 1 and **OFt** = 0 compressor is always on<br>• if **Ont** = 1 and **OFt** > 0 compressor in duty cycle | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| OFt | Regulator power-off time for a probe error:<br>• if **OFt** = 1 and **Ont** = 0 regulator always off<br>• if **OFt** = 1 and **Ont** > 0 regulator in duty cycle | 0...250 | min | 1 | 1 | 1 | 1 | 1 |
| dOn | Compressor relay activation delay time after request | 0...250 | s | 0 | 0 | 0 | 0 | 0 |
| dOF | Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dbi | Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| OdO (!) | Delay in activating outputs after the controller is powered on or after a power failure. **0** = not active | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dCS | "Deep Cooling Cycle" setpoint | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| tdC | "Deep Cooling Cycle" duration | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| dcc | Defrost activation delay after a "Deep Cooling Cycle" | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **dEF (Defrost)** | | | | | | | | |
| dty | Type of defrost.<br>**0** = electric defrost- compressor OFF during defrost; **1** = reverse cycle defrost (hot gas); compressor on during defrost; **2** = "Free" mode defrost; compressor independent defrost. | 0/1/2 | num | 0 | 0 | 0 | 0 | 1 |
| dit | Interval between the start of two defrost cycles | 0...250 | hours | 6 | 6 | 6 | 6 | 6 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| dCt | Selection of the defrost interval count mode **0** = compressor operating hours (DIGIFROST® method); defrost active only when the compressor is on; **1** = Real Time - controller operating hours; defrost count is always active when the machine is on and starts each time it is powered on; **2** = compressor stop.A defrost cycle runs at each stop (parameter **dty**). | 0/1/2 | num | 1 | 1 | 1 | 1 | 1 |
| dOH | Defrost cycle enabling delay from request | 0...59 | min | 0 | 0 | 0 | 0 | 0 |
| dEt | Defrost timeout.Determines the maximum defrost duration. | 1...250 | min | 30 | 30 | 30 | 30 | 30 |
| dSt | Defrost end temperature (determined by probe Pb2). | -67.0...320 | °C/°F | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| dPO | Activate defrost request at power on, if the temperature measured by Pb2 allows it.**n**(0) = no; **y**(1) = yes | n/y | flag | n | n | n | n | n |
| **Fans** | | | | | | | | |
| FSt | Fan stop temperature; a value read by the evaporator probe. | -67.0...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| FAd | Fan activation intervention differential (parameter **FSt**). | 1.0...50.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Fdt | Fan activation delay after a defrost cycle. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dt | Coil drainage time. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dFd | Allows exclusion of the evaporator fans to be selected or not selected during defrosting.**n** (0) = no; **y**(1) = yes (fan disabled or powered off). | n/y | flag | y | y | y | y | y |
| FCO | Evaporator fans operating mode.<br><br>| FCO | Fans with compressor ON | Fans with compressor OFF |<br>|---|---|---|<br>| 0 | Thermostats | Off |<br>| 1 | Thermostats | Thermostats |<br>| 2 | Thermostats | Day or night duty cycle | | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| Fon | Fan ON time in day duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| FoF | Fan OFF time in day duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| Fnn | Fan ON time in night duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| FnF | Fan OFF time in night duty cycle | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| ESF | Activation of "night" mode.**n**(0) = no; **y**(1) = yes | n/y | flag | n | n | n | n | n |
| **AL (Alarms)** | | | | | | | | |
| Att | Set the absolute or relative value for the **HAL** and **LAL** parameters. **Att** = 0: absolute **Att** = 1: relative | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| AFd | Alarm differential. | 1.0...50.0 | °C/°F | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| HAL | Maximum temperature alarm. Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal. | **LAL**...320 | °C/°F | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LAL | Minimum temperature alarm. Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal. | -67.0...**HAL** | °C/°F | -50.0 | -50.0 | -50.0 | -50.0 | -50.0 |
| PAO | Alarm exclusion time after controller is powered on following a power failure. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| dAO | Temperature alarm override time after defrost. | 0...999 | min | 0 | 0 | 0 | 0 | 0 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|---|---|---|---|---|---|---|---|---|
| OAO | Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms. | 0...10 | hours | 0 | 0 | 0 | 0 | 0 |
| tdO | Delay in door open alarm activation. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| tAO | Time delay for temperature alarm indication. | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| dAt | Alarm signalling end of defrost due to timeout.**n**(0) = alarms not active; **y**(1) = alarms active. | n/y | flag | n | n | n | n | n |
| rLO | An external alarm blocks the regulators.**n**(0) = not blocked; **y**(1) = blocked | n/y | flag | n | n | n | n | n |
| SA3 | Probe 3 alarm Setpoint. | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| dA3 | Probe 3 alarm differential. | 1.0...50.0 | °C/°F | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| **Lit (Lamps and digital inputs)** | | | | | | | | |
| dOd | Digital inputs powers off utilities: **0** = disabled; **1** = disables the fans; **2** = disables the compressor; **3** = disables fans and compressor | 0/1/2/3 | num | 0 | 0 | 0 | 2 | 0 |
| dAd | Activation delay for digital input | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| dCO | Compressor enabling delay from acknowledgement | 0...255 | min | 1 | 1 | 1 | 1 | 1 |
| **PrE (Pressure switch)** | | | | | | | | |
| Pen | Number of errors allowed per maximum/minimum pressure switch input | 0...15 | num | 0 | 0 | 0 | 0 | 0 |
| PEI | Minimum/maximum pressure switch error count interval. | 1...99 | min | 1 | 1 | 1 | 1 | 1 |
| PEt | Delay in activating compressor after pressure switch deactivation | 0...255 | min | 0 | 0 | 0 | 0 | 0 |
| **Add (Communication)** | | | | | | | | |
| PtS | Selection of communication protocol.**t**(0) = Televis; **d**(1) = Modbus | t/d | flag | t | t | t | t | t |
| dEA | Device index within the family | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| FAA | Device family.The pair of values **FAA** and **dEA** represent the controller network address and is indicated with the following format: **FF.DD** (where FF = **FAA** and DD = **dEA**). | 0...14 | num | 0 | 0 | 0 | 0 | 0 |
| Pty | MODBUS parity bit.**n**(0) = none; **E**(1) = even; **o**(2) = odd | n/E/o | num | n | n | n | n | n |
| StP | Modbus stop bit | 1b/2b | flag | 1b | 1b | 1b | 1b | 1b |
| **DiS (Display)** | | | | | | | | |
| LOC | Setpoint edit lock.See corresponding paragraph. It is still possible to open parameter programming to change parameters, including the status of this parameter to unlock the button pad **n**(0) = no; **y**(1) = yes. | n/y | flag | n | n | n | n | n |
| PS1 | When enabled (**PS1**≠0), it is the key to access the user parameters | 0...250 | num | 0 | 0 | 0 | 0 | 0 |
| PS2 | When enabled (**PS2**≠0), it is the key to access the installer parameters | 0...250 | num | 15 | 15 | 15 | 15 | 15 |
| ndt | Display with decimal point.**n**(0) = no; **y**(1) = yes; | n/y | flag | y | y | y | y | y |
| CA1 | Positive or negative temperature value to be added to the value of Pb1. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| CA2 | Positive or negative temperature value to be added to the value of Pb2. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| CA3 | Positive or negative temperature value to be added to the value of Pb3. | -12.0...+12.0 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|-----------|-------------|-------|-----|---------|-----|-----|-----|-----|
| ddL | Display mode during defrost.<br>**0** = display the temperature read by Pb1; **1** = lock the reading on the value of Pb1 at defrost start and until the setpoint is reached; **2** = display the **dEF** label during defrost and until the setpoint is reached. | 0/1/2 | num | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Ldd | Timeout value for display unlock - **dEF** label | 0...255 | min | 30 | 30 | 30 | 30 | 30 |
| dro | Select the unit of measurement used when displaying the temperature recorded by the probes.(**0** = °C, **1** = °F).<br>**Note**: the change from °C to °F or vice versa does not change the values of **SEt**, **diF**, etc. (example **SEt** = 10°C becomes 10°F) | 0/1 | flag | 0 | 0 | 0 | 0 | 0 |
| ddd | Selects type of value to display.<br>**0** = setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3 | 0/1/2/3 | num | 1 | 1 | 1 | 1 | 1 |
| **HCP (HACCP)** | | | | | | | | |
| SHH | Maximum HACCP alarm signals threshold | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| SLH | Minimum HACCP alarm signals threshold | -67.0...320 | °C/°F | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| drA | Minimum dwell time in critical area for the event to be recorded.After this time, a HACCP alarm is saved and reported. | 0...99 | min | 0 | 0 | 0 | 0 | 0 |
| drH | HACCP alarm reset time from last reset | 0...250 | hours | 0 | 0 | 0 | 0 | 0 |
| H50 | Enable HACCP and alarm relay functions.<br>**0** = HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled. | 0/1/2 | num | 0 | 0 | 0 | 0 | 0 |
| H51 | HACCP alarm override time | 0...250 | min | 0 | 0 | 0 | 0 | 0 |
| **CnF (Configuration)** | | | | | | | | |
| H00 | Select probe type.**0** = PTC; **1** = NTC; **2** = Pt1000 | 0/1/2 | flag | 1 | 1 | 1 | 1 | 1 |
| H11 | Configuration of digital input 1/polarity.<br>**0** = disabled; **±1** = defrost; **±2** = reduced set; **±3** = auxiliary; **±4** = door switch; **±5** = external alarms; **±6** = standby; **±7** = pressure switch; **±8** = Deep Cooling; **±9** = disable saving HACCP alarms.<br>**Note**:<br>• the "+" sign indicates that the input is active if the contact is closed.<br>• the "-" sign indicates that the input is active if the contact is open. | -9...+9 | num | 0 | 0 | 0 | 4 | 0 |
| H12 | Configuration of digital input 2/polarity.Same as **H11**. | -9 ... +9 | num | 0 | 0 | 0 | 0 | 0 |
| H21 | Configuration of digital output 1:<br>**0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarms; **5** = AUX; **6** = standby | 0...6 | num | 1 | 1 | 1 | 1 | 1 |
| H22 | Configuration of digital output 2.Same as **H21**. | 0...6 | num | 2 | 2 | 2 | 3 | 4 |
| H25 | Enable/disable buzzer.<br>**0** = disabled; **4** = enabled; **1-2-3-5-6-7-8** = NOT USED | 0...8 | num | 0 | 0 | 0 | 0 | 4 |
| H31 | Configuration of ⌃ button.<br>**0** = disabled; **1** = defrost; **2** = auxiliary; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = deep cooling cycle activation | 0...7 | num | 1 | 1 | 1 | 1 | 1 |
| H32 | Configuration of ⌄ button.Same as **H31**. | 0...7 | num | 0 | 0 | 0 | 0 | 0 |
| H42 | Evaporator probe present.**n**(0) = not present; **y**(1) = present | n/y | flag | y | y | n | y | n |

| Parameter | Description | Range | UOM | Default | AP1 | AP2 | AP3 | AP4 |
|-----------|-------------|-------|-----|---------|-----|-----|-----|-----|
| **H43** | Probe Pb3 present.**n**(0) = not present; **y**(1) = present | n/y | flag | n | n | n | n | n |
| **rEL** | Controller version.Read-only parameter. | / | / | / | / | / | / | / |
| **tAb** | Reserved: read-only parameter | / | / | / | / | / | / | / |
| **FPr (CopyCard)** | | | | | | | | |
| **UL** | Transfer programming parameters from controller to Copy Card | / | / | / | / | / | / | / |
| **Fr** | Format CopyCard.Deletes all the data entered in the CopyCard.<br>**Note**: use of the **Fr** parameter causes the permanent loss of the data entered.This operation cannot be undone. | / | / | / | / | / | / | / |
| **FnC (Functions)** | | | | | | | | |
| **rAP** | Reset pressure switch alarms | / | / | / | / | / | / | / |
| **rES** | Reset HACCP alarms | / | / | / | / | / | / | / |

**Note**: If one or more parameters in the **CnF** folder, or marked with a **(!)**, are changed, the controller must be powered off and then powered on again to ensure correct operation.

# Modbus functions and resources MSK447
# Set parameters using Modbus

### Introduction

All controller parameters can be set using Modbus RTU protocol, through the TTL port.

The byte is composed as follows: 8 bits for the data, an even parity bit (configurable) and a stop bit.

### Wiring diagrams

| To a single controller, via TTL | To several controllers, via RS485 |
|---|---|
|  |  |
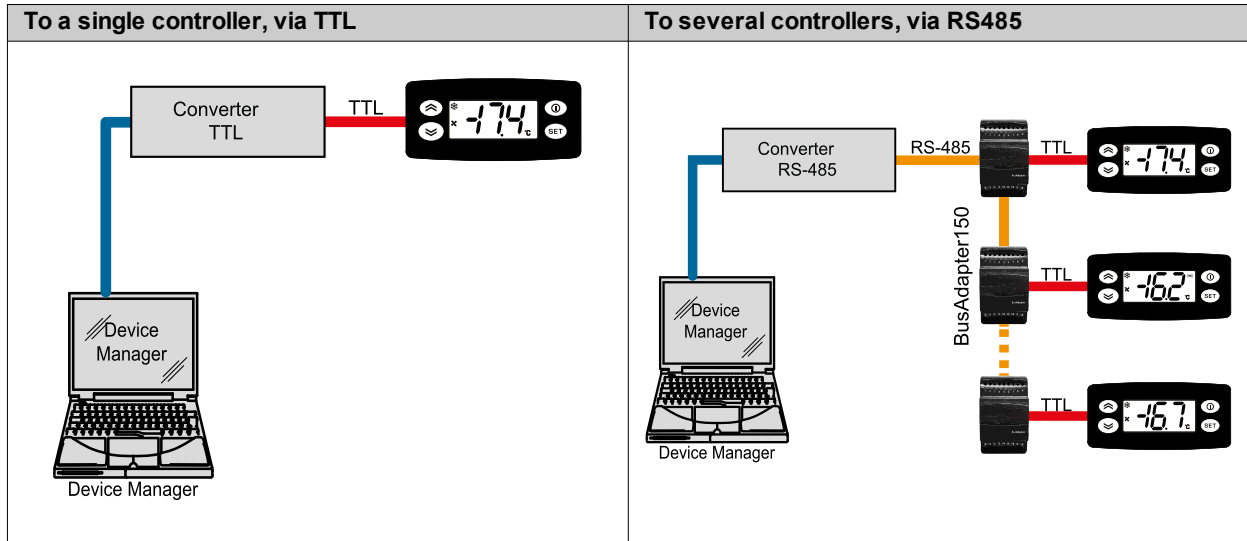
### Modbus commands and data areas

| Modbus command | Description |
|---|---|
| 3 | • Reading of 16 client side consecutive registers<br>• Reading of a single register for the parameters |
| 16 | • Writing 15 client side consecutive registers<br>• Writing a single register for the parameters |
| 43 | Reading controller ID:<br><br>| Field code | Description |<br>\|---\|---\|<br>\| 0 \| Manufacturer ID ("Invensys") \|<br>\| 1 \| Controller model/polycarbonate ID \|<br>\| 2 \| Family (MSK447)/controller version ID \| |

### Address configuration

The address (Device Address) of a controller in a Modbus message is composed of one byte and is formed of the family code and the device code, indicated by the **dBA** parameter, composed respectively of the **FAA** parameters (low nibble) and the **dEA** parameter (high nibble).

Below is the formula to calculate the address beginning from the **FAA** and **dEA** parameters: **dBA** = **FAA** x 16 + **dEA**.

The address 0 is used for broadcast messages that all slaves recognise. Slaves do not respond to broadcast messages.

### Controller configuration parameters

**Note**: to ensure proper operation, power-off and -on the controller after changing the **Pty** and **StP** parameters.

| Parameter | Description |
|---|---|
| PtS | TTL port protocol selection |
| dEA | Device index in family |
| FAA | Device family |
| Pty | Parity bit |
| StP | Stop bit |

# Parameter table

## Value addresses column

In the **Value address** column of the parameter table, the whole number portion of the address represents the address of the Modbus register, which contains the value of the resource to be read or written to the controller. The value after the decimal point indicates the position of the most significant data bit inside the register; if not indicated it is equal to zero. The latter information is always provided when the register contains more than one piece of information and it is necessary to distinguish the bits that actually represent the data point (the working size of the datum indicated in the **Data size** column should also be considered).

Given that the Modbus registers have the size of one word (16 bits), the index number after the decimal point can vary from 0 (least significant bit –LSb–) to 15 (most significant bit –MSb–).

**Examples**

**Note**: in binary form the least significant bit is the first on the right.

| Value Address | Data size | Value | | Content of register |
|---------------|-----------|-------|------|---------------------|
| 8806 | Word | **1350** | 1350 | (0000010101000110) |
| 8806 | Byte | **70** | 1350 | (0000010101**000110**) |
| 8806.8 | Byte | **5** | 1350 | (**00000101**01000110) |
| 8806.14 | 1 bit | **0** | 1350 | (0**0**00010101000110) |
| 8806.7 | 4 bit | **10** | 1350 | (00000**1010**1000110) |

**Note**: if the register contains more than one data point, proceed as follows for the write operation: read the current value of the register, modify the bits representing the resource concerned, then write the register

## Visibility address column

In the **Visibility address** column of the parameter table, the whole number part of the address represents the address of the Modbus register, which contains the value of the parameter's visibility. The value after the decimal point indicates the position of the most significant data point in the register; if not indicated it is equal to zero. Below are the possible visibility levels:

- **3** = parameter or folder always visible
- **2** = manufacturer level; can only be viewed by entering the manufacturer's password (**PS2** parameter) (all the parameters declared always visible, the parameters visible at installer level and those at manufacturer level are visible)
- **1** = installer level; can only be viewed by entering the manufacturer's password (**PS1** parameter) (all the parameters declared always visible and the parameters visible at installer level are visible)
- **0** = parameter or folder not visible

By default all parameters have visibility 3.

**Examples**

**Note**: in binary form the least significant bit is the first on the right.

| Visibility Address | Data size | Value | | Content of register |
|--------------------|-----------|-------|--------|---------------------|
| 49336.6 | 2 bit | **3** | 65 535 | -------------(**11**1111111111111) |
| 49337 | 2 bit | **3** | 65 535 | (111111**11**11111111) |
| 49337.2 | 2 bit | **3** | 65 535 | (1111**11**1111111111) |
| 49337.4 | 2 bit | **3** | 65 535 | (11**11**111111111111) |
| 49337.6 | 2 bit | **3** | 65 535 | (**11**11111111111111) |

## CPL column

In the **CPL** column of the parameter table, **Y** indicates that the value read from the register needs to be converted because it represents a number with a sign. In the other cases the value is always positive or null.

To perform the conversion, proceed as follows:

| If the value of the register is between... | Then the result is ... |
|--------------------------------------------|------------------------|
| 0 and 32 767 | the value itself (zero and positive values). |
| 32 768 and 65 535 | the value of the register, minus 65 536 (negative values). |

## Parameters

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **Set** | 16416 | 49320.4 | Control Setpoint | Word | Y | **LSE**...**HSE** | °C/°F |
| **CP** | | | | | | | |
| **diF** | 16386 | 49320.6 | Activation differential | Word | - | 0.1...30.0 | °C/°F |
| **HSE** | 16418 | 49321 | Maximum value the setpoint can be set to | Word | Y | **LSE**...320 | °C/°F |
| **LSE** | 16420 | 49321.2 | Minimum value the setpoint can be set to | Word | Y | -67.0...**HSE** | °C/°F |
| **OSP** | 16388 | 49321.4 | Setpoint offset | Word | Y | -30.0...30.0 | °C/°F |
| **HC** | 49212 | 49321.6 | Operating mode (Heating/Cooling) | Byte | - | 0...1 | flag |
| **Ont** | 49217 | 49322.4 | Compressor output ON time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **OFt** | 49218 | 49322.6 | Compressor output OFF time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **dOn** | 49219 | 49323 | Compressor output enabling delay from request | Byte | - | 0...250 | s |
| **dOF** | 49220 | 49323.2 | Compressor output enabling delay from shutdown | Byte | - | 0...250 | min |
| **dbi** | 49221 | 49323.4 | Delay between two consecutive starts of the compressor output | Byte | - | 0...250 | min |
| **OdO** | 49222 | 49323.6 | Delay output enabling from power-on | Byte | - | 0...250 | min |
| **dCS** | 16442 | 49324 | Deep cooling setpoint | Word | Y | -67.0...320 | °C/°F |
| **tdC** | 49291 | 49324.2 | Deep cooling duration | Byte | - | 0...255 | min |
| **dcc** | 49292 | 49324.4 | Defrost delay after deep cooling | Byte | - | 0...255 | num |
| **dEF** | | | | | | | |
| **dtY** | 49223 | 49324.6 | Type of defrost | Byte | - | 0...2 | num |
| **dit** | 49266 | 49325 | Interval between the start of two defrost cycles | Byte | - | 0...250 | hours |
| **dCt** | 49226 | 49325.6 | Defrost interval count mode | Byte | - | 0...3 | num |
| **dOH** | 49227 | 49326 | Defrost cycle enabling delay from request | Byte | - | 0...59 | min |
| **dEt** | 49228 | 49326.2 | Defrost timeout. Determines the maximum defrost duration. | Byte | - | 1...250 | min |
| **dSt** | 16390 | 49326.4 | Defrost end temperature (determined by probe Pb2) | Word | Y | -67.0...320 | °C/°F |
| **dPO** | 49229 | 49326.6 | Activate defrost request at power on, if the temperature measured by Pb2 allows it. | Byte | - | 0...1 | flag |
| **Fans** | | | | | | | |
| **FSt** | 16394 | 49327.6 | Evaporator fans disabling temperature | Word | Y | -67.0...320 | °C/°F |
| **FAd** | 16398 | 49328.2 | Evaporator fans activation differential | Word | - | 1.0...50.0 | °C/°F |
| **Fdt** | 49232 | 49328.4 | Evaporator fans delay after defrost cycle | Byte | - | 0...250 | min |
| **dt** | 49233 | 49328.6 | Coil drainage time | Byte | - | 0...250 | min |
| **dFd** | 49234 | 49329 | Evaporator fans disabling during defrost time | Byte | - | 0...1 | flag |
| **FCO** | 49235 | 49329.2 | Evaporator fans status with compressor output OFF | Byte | - | 0...2 | num |
| **Fon** | 49237 | 49329.6 | Evaporator fans ON time in cyclic regulator mode | Byte | - | 0...99 | min |
| **FoF** | 49238 | 49330 | Evaporator fans OFF time in cyclic regulator mode | Byte | - | 0...99 | min |
| **Fnn** | 49278 | 49330.2 | Evaporator fans ON time in duty cycle night mode | Byte | - | 0...99 | num |
| **FnF** | 49279 | 49330.4 | Evaporator fans OFF time in duty cycle night mode | Byte | - | 0...99 | num |
| **ESF** | 49280 | 49330.6 | Night activation mode | Byte | - | 0...1 | flag |
| **AL** | | | | | | | |
| **Att** | 49241 | 49331 | **HAL** and **LAL** parameter mode (absolute or relative) | Byte | - | 0...1 | flag |
| **AFd** | 16400 | 49331.2 | Alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **HAL** | 16422 | 49331.4 | Maximum alarm threshold | Word | Y | **LAL**...320 | °C/°F |
| **LAL** | 16424 | 49331.6 | Minimum alarm threshold | Word | Y | -67.0...**HAL** | °C/°F |
| **PAO** | 49242 | 49332 | Alarm disabling after power-on | Byte | - | 0...10 | hours |
| **dAO** | 16402 | 49332.2 | Temperature alarm disabling time after defrost cycle | Word | - | 0...999 | min |
| **OAO** | 49243 | 49332.4 | High and low temperature alarms disabling time after door closing | Byte | - | 0...10 | hours |
| **tdO** | 49244 | 49332.6 | Open door disabling time | Byte | - | 0...250 | min |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| tAO | 49245 | 49333 | Temperature alarms delay time | Byte | - | 0...250 | min |
| dAt | 49246 | 49333.2 | Alarm signalling end of defrost due to timeout | Byte | - | 0...1 | flag |
| rLO | 49247 | 49333.4 | An external alarm blocks the regulators | Byte | - | 0...1 | flag |
| SA3 | 16432 | 49334.2 | Alarm setpoint for probe 3 | Word | Y | -67.0...320 | °C/°F |
| dA3 | 16434 | 49334.4 | Probe 3 alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **Lit** | | | | | | | |
| dOd | 49215 | 49334.6 | Enable utility power-off on activation of door switch | Byte | - | 0...3 | num |
| dAd | 49216 | 49335 | Activation delay for digital inputs | Byte | - | 0...255 | min |
| dCO | 49293 | 49345.4 | Delay in deactivating compressor after door opened | Byte | - | 0...255 | min |
| **PrE** | | | | | | | |
| PEn | 49274 | 49335.4 | Number of activations allowed per maximum/minimum pressure switch input | Byte | - | 0...15 | num |
| PEi | 49275 | 49335.6 | Minimum/maximum pressure switch error count interval | Byte | - | 1...99 | min |
| PEt | 49276 | 49336 | Delay in activating compressor after pressure switch deactivation | Byte | - | 0...255 | min |
| **Add** | | | | | | | |
| PtS | 49281 | 49312.2 | Protocol selection | Byte | - | 0...1 | flag |
| dEA | 49239 | 49312.4 | Controller address | Byte | - | 0...14 | num |
| FAA | 49240 | 49312.6 | Family address | Byte | - | 0...14 | num |
| PtY | 49282 | 49313 | MODBUS parity bit | Byte | - | 0...2 | num |
| StP | 49283 | 49313.2 | MODBUS stop bit | Byte | - | 0...1 | flag |
| **dis** | | | | | | | |
| LOC | 49250 | 49336.2 | Enable button pad lock | Byte | - | 0...1 | flag |
| PS1 | 49267 | 49336.4 | Password 1 value | Byte | - | 0...250 | num |
| PS2 | 49268 | 49336.6 | Password 2 value | Byte | - | 0...250 | num |
| ndt | 49251 | 49337 | Display with decimal point | Byte | - | 0...1 | flag |
| CA1 | 16404 | 49337.2 | Cell probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| CA2 | 16406 | 49337.4 | Evaporator probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| CA3 | 16436 | 49337.6 | Probe 3 calibration | Word | Y | -12.0...12.0 | °C/°F |
| ddL | 49253 | 49338.6 | Resource locking after defrost end | Byte | - | 0...2 | num |
| Ldd | 49277 | 49339 | Display lock timeout from defrost end | Byte | - | 0...255 | min |
| dro | 49270 | 49339.2 | °C/°F selection | Byte | - | 0...1 | flag |
| ddd | 49254 | 49339.4 | Selection of main display value | Byte | - | 0...3 | num |
| **HCP** | | | | | | | |
| SHH | 16438 | 49339.6 | Maximum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| SLH | 16440 | 49340 | Minimum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| drA | 49286 | 49340.2 | Minimum dwelling time in critical area before alarm signalling | Byte | - | 0...99 | min |
| drH | 49287 | 49340.4 | HACCP alarm reset time from last manual reset | Byte | - | 0...250 | hours |
| H50 | 49288 | 49340.6 | Enable HACCP alarms storage with/without alarm relay enabling | Byte | - | 0...2 | num |
| H51 | 49289 | 49341 | HACCP alarms save exclusion time (button or digital input) | Byte | - | 0...250 | min |
| **CnF** | | | | | | | |
| H00 | 49269 | 49341.2 | NTC/PTC analogue input type selection | Byte | - | 0...2 | num |
| H11 | 16412 | 49342.2 | Configuration and polarity of digital input 1 | Word | Y | -9...9 | num |
| H12 | 16430 | 49342.4 | Configuration and polarity of digital input 2 | Word | Y | -9...9 | num |
| H21 | 49256 | 49342.6 | Configuration of digital output 1 | Byte | - | 0...6 | num |
| H22 | 49257 | 49343 | Configuration of digital output 2 | Byte | - | 0...6 | num |
| H23 | 49258 | 49343.2 | Configuration of digital output 3 | Byte | - | 0...6 | num |
| H24 | 49259 | 49343.4 | Configuration of digital output 4 | Byte | - | 0...6 | num |
| H25 | 49260 | 49343.6 | Configuration of digital output 5 (Buzzer) | Byte | - | 0...6 | num |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **H31** | 49261 | 49344 | Button configuration ⌃ | Byte | - | 0...6 | num |
| **H32** | 49262 | 49344.2 | Button configuration ⌄ | Byte | - | 0...6 | num |
| **H42** | 49265 | 49345 | Evaporator probe present | Byte | - | 0...1 | flag |
| **H43** | 49284 | 49345.2 | Probe Pb3 present | Byte | - | 0...1 | flag |
| **rEL** | --- | 49313.6 | Controller version visibility | 2 bit | - | 0...3 | num |
| **tAb** | --- | 49314 | Parameters table visibility | 2 bit | - | 0...3 | num |
| **FPr** | | | | | | | |
| **UL** | --- | 49318.6 | Visibility of programming parameter transfer function from the controller to the CopyCard | 2 bit | - | 0...3 | num |
| **Fr** | --- | 49319.2 | CopyCard format function visibility | 2 bit | - | 0...3 | num |
| **FnC** | | | | | | | |
| **rAP** | --- | 49320 | Pressure switch alarms reset visibility | 2 bit | - | 0...3 | num |
| **rES** | --- | 49345.6 | HACCP alarms reset visibility | 2 bit | - | 0...3 | num |
| **Application 1 parameters** | | | | | | | |
| **V1-Set** | 16732 | 49604.4 | Control Setpoint | Word | Y | **LSE**...**HSE** | °C/°F |
| **V1-diF** | 16704 | 49604.6 | Activation differential | Word | - | 0.1...30.0 | °C/°F |
| **V1-HSE** | 16734 | 49605 | Maximum value the setpoint can be set to | Word | Y | **LSE**...320 | °C/°F |
| **V1-LSE** | 16736 | 49605.2 | Minimum value the setpoint can be set to | Word | Y | -67.0...**HSE** | °C/°F |
| **V1-OSP** | 16706 | 49605.4 | Setpoint offset | Word | Y | -30.0...30.0 | °C/°F |
| **V1-HC** | 49524 | 49605.6 | Operating mode (Heating/Cooling) | Byte | - | 0...1 | flag |
| **V1-Ont** | 49529 | 49606.4 | Compressor output ON time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V1-OFt** | 49530 | 49606.6 | Compressor output OFF time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V1-dOn** | 49531 | 49607 | Compressor output enabling delay from request | Byte | - | 0...250 | s |
| **V1-dOF** | 49532 | 49607.2 | Compressor output enabling delay from shutdown | Byte | - | 0...250 | min |
| **V1-dbi** | 49533 | 49607.4 | Delay between two consecutive starts of the compressor output | Byte | - | 0...250 | min |
| **V1-OdO** | 49534 | 49607.6 | Delay output enabling from power-on | Byte | - | 0...250 | min |
| **V1-dCS** | 16754 | 49608 | Deep cooling setpoint | Word | Y | -67.0...320 | °C/°F |
| **V1-tdC** | 49596 | 49608.2 | Deep cooling duration | Byte | - | 0...255 | min |
| **V1-dcc** | 49597 | 49608.4 | Defrost delay after deep cooling | Byte | - | 0...255 | num |
| **V1-dtY** | 49535 | 49608.6 | Type of defrost | Byte | - | 0...2 | num |
| **V1-dit** | 49576 | 49609 | Interval between defrost cycles | Byte | - | 0...250 | hours |
| **V1-dCt** | 49538 | 49609.6 | Defrost interval count mode | Byte | - | 0...3 | num |
| **V1-dOH** | 49539 | 49610 | Defrost cycle enabling delay from request | Byte | - | 0...59 | min |
| **V1-dEt** | 49540 | 49610.2 | Defrost timeout | Byte | - | 1...250 | min |
| **V1-dSt** | 16708 | 49610.4 | Defrost end temperature | Word | Y | -67.0...320 | °C/°F |
| **V1-dPO** | 49541 | 49610.6 | Defrost enabling request from power-on | Byte | - | 0...1 | flag |
| **V1-FSt** | 16712 | 49611.6 | Evaporator fans disabling temperature | Word | Y | -67.0...320 | °C/°F |
| **V1-FAd** | 16716 | 49612.2 | Evaporator fans activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V1-Fdt** | 49544 | 49612.4 | Evaporator fans delay after defrost cycle | Byte | - | 0...250 | min |
| **V1-dt** | 49545 | 49612.6 | Coil drainage time | Byte | - | 0...250 | min |
| **V1-dFd** | 49546 | 49613 | Evaporator fans disabling during defrost time | Byte | - | 0...1 | flag |
| **V1-FCO** | 49547 | 49613.2 | Evaporator fans status with compressor output OFF | Byte | - | 0...2 | num |
| **V1-Fon** | 49549 | 49613.6 | Evaporator fans ON time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V1-FoF** | 49550 | 49614 | Evaporator fans OFF time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V1-Fnn** | 49587 | 49614.2 | Evaporator fans ON time in duty cycle night mode | Byte | - | 0...99 | num |
| **V1-FnF** | 49588 | 49614.4 | Evaporator fans OFF time in duty cycle night mode | Byte | - | 0...99 | num |
| **V1-ESF** | 49589 | 49614.6 | Night activation mode | Byte | - | 0...1 | flag |
| **V1-Att** | 49551 | 49615 | **HAL** and **LAL** parameter mode (absolute or relative) | Byte | - | 0...1 | flag |
| **V1-AFd** | 16718 | 49615.2 | Alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V1-HAL** | 16738 | 49615.4 | Maximum alarm threshold | Word | Y | **LAL**...320 | °C/°F |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **V1-LAL** | 16740 | 49615.6 | Minimum alarm threshold | Word | Y | -67.0...**HAL** | °C/°F |
| **V1-PAO** | 49552 | 49616 | Alarm disabling after power-on | Byte | - | 0...10 | hours |
| **V1-dAO** | 16720 | 49616.2 | Temperature alarm disabling time after defrost cycle | Word | - | 0...999 | min |
| **V1-OAO** | 49553 | 49616.4 | High and low temperature alarms disabling time after door closing | Byte | - | 0...10 | hours |
| **V1-tdO** | 49554 | 49616.6 | Open door disabling time | Byte | - | 0...250 | min |
| **V1-tAO** | 49555 | 49617 | Temperature alarms delay time | Byte | - | 0...250 | min |
| **V1-dAt** | 49556 | 49617.2 | Alarm signalling end of defrost due to timeout | Byte | - | 0...1 | flag |
| **V1-rLO** | 49557 | 49617.4 | An external alarm blocks the regulators | Byte | - | 0...1 | flag |
| **V1-SA3** | 16744 | 49618.2 | Alarm setpoint for probe 3 | Word | Y | -67.0...320 | °C/°F |
| **V1-dA3** | 16746 | 49618.4 | Probe 3 alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V1-dOd** | 49527 | 49618.6 | Enable utility power-off on activation of door switch | Byte | - | 0...3 | num |
| **V1-dAd** | 49528 | 49619 | Activation delay for digital inputs | Byte | - | 0...255 | min |
| **V1-dCO** | 49598 | 49629.4 | Delay in deactivating compressor after door opened | Byte | - | 0...255 | min |
| **V1-PEn** | 49583 | 49619.4 | Number of activations allowed per maximum/minimum pressure switch input | Byte | - | 0...15 | num |
| **V1-PEi** | 49584 | 49619.6 | Minimum/maximum pressure switch error count interval | Byte | - | 1...99 | min |
| **V1-PEt** | 49585 | 49620 | Delay in activating compressor after pressure switch deactivation | Byte | - | 0...255 | min |
| **V1-LOC** | 49560 | 49620.2 | Enable button pad lock | Byte | - | 0...1 | flag |
| **V1-PS1** | 49577 | 49620.4 | Password 1 value | Byte | - | 0...250 | num |
| **V1-PS2** | 49578 | 49620.6 | Password 2 value | Byte | - | 0...250 | num |
| **V1-ndt** | 49561 | 49621 | Display with decimal point | Byte | - | 0...1 | flag |
| **V1-CA1** | 16722 | 49621.2 | Cell probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V1-CA2** | 16724 | 49621.4 | Evaporator probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V1-CA3** | 16748 | 49621.6 | Probe 3 calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V1-ddL** | 49563 | 49622.6 | Resource locking after defrost end | Byte | - | 0...2 | num |
| **V1-Ldd** | 49586 | 49623 | Display lock timeout from defrost end | Byte | - | 0...255 | min |
| **V1-dro** | 49580 | 49623.2 | °C/°F selection | Byte | - | 0...1 | flag |
| **V1-ddd** | 49564 | 49623.4 | Selection of main display value | Byte | - | 0...3 | num |
| **V1-SHH** | 16750 | 49623.6 | Maximum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V1-SLH** | 16752 | 49624 | Minimum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V1-drA** | 49591 | 49624.2 | Minimum dwelling time in critical area before alarm signalling | Byte | - | 0...99 | min |
| **V1-drH** | 49592 | 49624.4 | HACCP alarm reset time from last manual reset | Byte | - | 0...250 | hours |
| **V1-H50** | 49593 | 49624.6 | Enable HACCP alarms storage with/without alarm relay enabling | Byte | - | 0...2 | num |
| **V1-H51** | 49594 | 49625 | HACCP alarms save exclusion time (button or digital input) | Byte | - | 0...250 | min |
| **V1-H00** | 49579 | 49625.2 | NTC/PTC analogue input type selection | Byte | - | 0...2 | num |
| **V1-H11** | 16730 | 49626.2 | Configuration and polarity of digital input 1 | Word | Y | -9...9 | num |
| **V1-H12** | 16742 | 49626.4 | Configuration and polarity of digital input 2 | Word | Y | -9...9 | num |
| **V1-H21** | 49566 | 49626.6 | Configuration of digital output 1 | Byte | - | 0...6 | num |
| **V1-H22** | 49567 | 49627 | Configuration of digital output 2 | Byte | - | 0...6 | num |
| **V1-H23** | 49568 | 49627.2 | Configuration of digital output 3 | Byte | - | 0...6 | num |
| **V1-H24** | 49569 | 49627.4 | Configuration of digital output 4 | Byte | - | 0...6 | num |
| **V1-H25** | 49570 | 49627.6 | Configuration of digital output 5 (Buzzer) | Byte | - | 0...6 | num |
| **V1-H31** | 49571 | 49628 | Button configuration ⮝ | Byte | - | 0...6 | num |
| **V1-H32** | 49572 | 49628.2 | Button configuration ⮟ | Byte | - | 0...6 | num |
| **V1-H42** | 49575 | 49629 | Evaporator probe present | Byte | - | 0...1 | flag |
| **V1-H43** | 49590 | 49629.2 | Probe Pb3 present | Byte | - | 0...1 | flag |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **Application 2 parameters** | | | | | | | |
| **V2-Set** | 16908 | 49780.4 | Control Setpoint | Word | Y | **LSE**...**HSE** | °C/°F |
| **V2-diF** | 16880 | 49780.6 | Activation differential | Word | - | 0.1...30.0 | °C/°F |
| **V2-HSE** | 16910 | 49781 | Maximum value the setpoint can be set to | Word | Y | **LSE**...320 | °C/°F |
| **V2-LSE** | 16912 | 49781.2 | Minimum value the setpoint can be set to | Word | Y | -67.0...**HSE** | °C/°F |
| **V2-OSP** | 16882 | 49781.4 | Setpoint offset | Word | Y | -30.0...30.0 | °C/°F |
| **V2-HC** | 49700 | 49781.6 | Operating mode (Heating/Cooling) | Byte | - | 0...1 | flag |
| **V2-Ont** | 49705 | 49782.4 | Compressor output ON time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V2-OFt** | 49706 | 49782.6 | Compressor output OFF time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V2-dOn** | 49707 | 49783 | Compressor output enabling delay from request | Byte | - | 0...250 | s |
| **V2-dOF** | 49708 | 49783.2 | Compressor output enabling delay from shutdown | Byte | - | 0...250 | min |
| **V2-dbi** | 49709 | 49783.4 | Delay between two consecutive starts of the compressor output | Byte | - | 0...250 | min |
| **V2-OdO** | 49710 | 49783.6 | Delay output enabling from power-on | Byte | - | 0...250 | min |
| **V2-dCS** | 16930 | 49784 | Deep cooling setpoint | Word | Y | -67.0...320 | °C/°F |
| **V2-tdC** | 49772 | 49784.2 | Deep cooling duration | Byte | - | 0...255 | min |
| **V2-dcc** | 49773 | 49784.4 | Defrost delay after deep cooling | Byte | - | 0...255 | num |
| **V2-dtY** | 49711 | 49784.6 | Type of defrost | Byte | - | 0...2 | num |
| **V2-dit** | 49752 | 49785 | Interval between defrost cycles | Byte | - | 0...250 | hours |
| **V2-dCt** | 49714 | 49785.6 | Defrost interval count mode | Byte | - | 0...3 | num |
| **V2-dOH** | 49715 | 49786 | Defrost cycle enabling delay from request | Byte | - | 0...59 | min |
| **V2-dEt** | 49716 | 49786.2 | Defrost timeout | Byte | - | 1...250 | min |
| **V2-dSt** | 16884 | 49786.4 | Defrost end temperature | Word | Y | -67.0...320 | °C/°F |
| **V2-dPO** | 49717 | 49786.6 | Defrost enabling request from power-on | Byte | - | 0...1 | flag |
| **V2-FSt** | 16888 | 49787.6 | Evaporator fans disabling temperature | Word | Y | -67.0...320 | °C/°F |
| **V2-FAd** | 16892 | 49788.2 | Evaporator fans activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V2-Fdt** | 49720 | 49788.4 | Evaporator fans delay after defrost cycle | Byte | - | 0...250 | min |
| **V2-dt** | 49721 | 49788.6 | Coil drainage time | Byte | - | 0...250 | min |
| **V2-dFd** | 49722 | 49789 | Evaporator fans disabling during defrost time | Byte | - | 0...1 | flag |
| **V2-FCO** | 49723 | 49789.2 | Evaporator fans status with compressor output OFF | Byte | - | 0...2 | num |
| **V2-Fon** | 49725 | 49789.6 | Evaporator fans ON time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V2-FoF** | 49726 | 49790 | Evaporator fans OFF time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V2-Fnn** | 49763 | 49790.2 | Evaporator fans ON time in duty cycle night mode | Byte | - | 0...99 | num |
| **V2-FnF** | 49764 | 49790.4 | Evaporator fans OFF time in duty cycle night mode | Byte | - | 0...99 | num |
| **V2-ESF** | 49765 | 49790.6 | Night activation mode | Byte | - | 0...1 | flag |
| **V2-Att** | 49727 | 49791 | **HAL** and **LAL** parameter mode (absolute or relative) | Byte | - | 0...1 | flag |
| **V2-AFd** | 16894 | 49791.2 | Alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V2-HAL** | 16914 | 49791.4 | Maximum alarm threshold | Word | Y | **LAL**...320 | °C/°F |
| **V2-LAL** | 16916 | 49791.6 | Minimum alarm threshold | Word | Y | -67.0...**HAL** | °C/°F |
| **V2-PAO** | 49728 | 49792 | Alarm disabling after power-on | Byte | - | 0...10 | hours |
| **V2-dAO** | 16896 | 49792.2 | Temperature alarm disabling time after defrost cycle | Word | - | 0...999 | min |
| **V2-OAO** | 49729 | 49792.4 | High and low temperature alarms disabling time after door closing | Byte | - | 0...10 | hours |
| **V2-tdO** | 49730 | 49792.6 | Open door disabling time | Byte | - | 0...250 | min |
| **V2-tAO** | 49731 | 49793 | Temperature alarms delay time | Byte | - | 0...250 | min |
| **V2-dAt** | 49732 | 49793.2 | Alarm signalling end of defrost due to timeout | Byte | - | 0...1 | flag |
| **V2-rLO** | 49733 | 49793.4 | An external alarm blocks the regulators | Byte | - | 0...1 | flag |
| **V2-SA3** | 16920 | 49794.2 | Alarm setpoint for probe 3 | Word | Y | -67.0...320 | °C/°F |
| **V2-dA3** | 16922 | 49794.4 | Probe 3 alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V2-dOd** | 49703 | 49794.6 | Enable utility power-off on activation of door switch | Byte | - | 0...3 | num |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **V2-dAd** | 49704 | 49795 | Activation delay for digital inputs | Byte | - | 0...255 | min |
| **V2-dCO** | 49774 | 49805.4 | Delay in deactivating compressor after door opened | Byte | - | 0...255 | min |
| **V2-PEn** | 49759 | 49795.4 | Number of activations allowed per maximum/minimum pressure switch input | Byte | - | 0...15 | num |
| **V2-PEi** | 49760 | 49795.6 | Minimum/maximum pressure switch error count interval | Byte | - | 1...99 | min |
| **V2-PEt** | 49761 | 49796 | Delay in activating compressor after pressure switch deactivation | Byte | - | 0...255 | min |
| **V2-LOC** | 49736 | 49796.2 | Enable button pad lock | Byte | - | 0...1 | flag |
| **V2-PS1** | 49753 | 49796.4 | Password 1 value | Byte | - | 0...250 | num |
| **V2-PS2** | 49754 | 49796.6 | Password 2 value | Byte | - | 0...250 | num |
| **V2-ndt** | 49737 | 49797 | Display with decimal point | Byte | - | 0...1 | flag |
| **V2-CA1** | 16898 | 49797.2 | Cell probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V2-CA2** | 16900 | 49797.4 | Evaporator probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V2-CA3** | 16924 | 49797.6 | Probe 3 calibration | Word | Y | -12.0...12.0 | °C/°F |
| **V2-ddL** | 49739 | 49798.6 | Resource locking after defrost end | Byte | - | 0...2 | num |
| **V2-Ldd** | 49762 | 49799 | Display lock timeout from defrost end | Byte | - | 0...255 | min |
| **V2-dro** | 49756 | 49799.2 | °C/°F selection | Byte | - | 0...1 | flag |
| **V2-ddd** | 49740 | 49799.4 | Selection of main display value | Byte | - | 0...3 | num |
| **V2-SHH** | 16926 | 49799.6 | Maximum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V2-SLH** | 16928 | 49800 | Minimum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V2-drA** | 49767 | 49800.2 | Minimum dwelling time in critical area before alarm signalling | Byte | - | 0...99 | min |
| **V2-drH** | 49768 | 49800.4 | HACCP alarm reset time from last manual reset | Byte | - | 0...250 | hours |
| **V2-H50** | 49769 | 49800.6 | Enable HACCP alarms storage with/without alarm relay enabling | Byte | - | 0...2 | num |
| **V2-H51** | 49770 | 49801 | HACCP alarms save exclusion time (button or digital input) | Byte | - | 0...250 | min |
| **V2-H00** | 49755 | 49801.2 | NTC/PTC analogue input type selection | Byte | - | 0...2 | num |
| **V2-H11** | 16906 | 49802.2 | Configuration and polarity of digital input 1 | Word | Y | -9...9 | num |
| **V2-H12** | 16918 | 49802.4 | Configuration and polarity of digital input 2 | Word | Y | -9...9 | num |
| **V2-H21** | 49742 | 49802.6 | Configuration of digital output 1 | Byte | - | 0...6 | num |
| **V2-H22** | 49743 | 49803 | Configuration of digital output 2 | Byte | - | 0...6 | num |
| **V2-H23** | 49744 | 49803.2 | Configuration of digital output 3 | Byte | - | 0...6 | num |
| **V2-H24** | 49745 | 49803.4 | Configuration of digital output 4 | Byte | - | 0...6 | num |
| **V2-H25** | 49746 | 49803.6 | Configuration of digital output 5 (Buzzer) | Byte | - | 0...6 | num |
| **V2-H31** | 49747 | 49804 | Button configuration ⏫ | Byte | - | 0...6 | num |
| **V2-H32** | 49748 | 49804.2 | Button configuration ⏬ | Byte | - | 0...6 | num |
| **V2-H42** | 49751 | 49805 | Evaporator probe present | Byte | - | 0...1 | flag |
| **V2-H43** | 49766 | 49805.2 | Probe Pb3 present | Byte | - | 0...1 | flag |
| **Application 3 parameters** | | | | | | | |
| **V3-Set** | 17084 | 49956.4 | Control Setpoint | Word | Y | **LSE**...**HSE** | °C/°F |
| **V3-diF** | 17056 | 49956.6 | Activation differential | Word | - | 0.1...30.0 | °C/°F |
| **V3-HSE** | 17086 | 49957 | Maximum value the setpoint can be set to | Word | Y | **LSE**...320 | °C/°F |
| **V3-LSE** | 17088 | 49957.2 | Minimum value the setpoint can be set to | Word | Y | -67.0...**HSE** | °C/°F |
| **V3-OSP** | 17058 | 49957.4 | Setpoint offset | Word | Y | -30.0...30.0 | °C/°F |
| **V3-HC** | 49876 | 49957.6 | Operating mode (Heating/Cooling) | Byte | - | 0...1 | flag |
| **V3-Ont** | 49881 | 49958.4 | Compressor output ON time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V3-OFt** | 49882 | 49958.6 | Compressor output OFF time with faulty Pb1 probe | Byte | - | 0...250 | min |
| **V3-dOn** | 49883 | 49959 | Compressor output enabling delay from request | Byte | - | 0...250 | s |
| **V3-dOF** | 49884 | 49959.2 | Compressor output enabling delay from shutdown | Byte | - | 0...250 | min |
| **V3-dbi** | 49885 | 49959.4 | Delay between two consecutive starts of the compressor output | Byte | - | 0...250 | min |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| V3-OdO | 49886 | 49959.6 | Delay output enabling from power-on | Byte | - | 0...250 | min |
| V3-dCS | 17106 | 49960 | Deep cooling setpoint | Word | Y | -67.0...320 | °C/°F |
| V3-tdC | 49948 | 49960.2 | Deep cooling duration | Byte | - | 0...255 | min |
| V3-dcc | 49949 | 49960.4 | Defrost delay after deep cooling | Byte | - | 0...255 | num |
| V3-dtY | 49887 | 49960.6 | Type of defrost | Byte | - | 0...2 | num |
| V3-dit | 49928 | 49961 | Interval between defrost cycles | Byte | - | 0...250 | hours |
| V3-dCt | 49890 | 49961.6 | Defrost interval count mode | Byte | - | 0...3 | num |
| V3-dOH | 49891 | 49962 | Defrost cycle enabling delay from request | Byte | - | 0...59 | min |
| V3-dEt | 49892 | 49962.2 | Defrost timeout | Byte | - | 1...250 | min |
| V3-dSt | 17060 | 49962.4 | Defrost end temperature | Word | Y | -67.0...320 | °C/°F |
| V3-dPO | 49893 | 49962.6 | Defrost enabling request from power-on | Byte | - | 0...1 | flag |
| V3-FSt | 17064 | 49963.6 | Evaporator fans disabling temperature | Word | Y | -67.0...320 | °C/°F |
| V3-FAd | 17068 | 49964.2 | Evaporator fans activation differential | Word | - | 1.0...50.0 | °C/°F |
| V3-Fdt | 49896 | 49964.4 | Evaporator fans delay after defrost cycle | Byte | - | 0...250 | min |
| V3-dt | 49897 | 49964.6 | Coil drainage time | Byte | - | 0...250 | min |
| V3-dFd | 49898 | 49965 | Evaporator fans disabling during defrost time | Byte | - | 0...1 | flag |
| V3-FCO | 49899 | 49965.2 | Evaporator fans status with compressor output OFF | Byte | - | 0...2 | num |
| V3-Fon | 49901 | 49965.6 | Evaporator fans ON time in cyclic regulator mode | Byte | - | 0...99 | min |
| V3-FoF | 49902 | 49966 | Evaporator fans OFF time in cyclic regulator mode | Byte | - | 0...99 | min |
| V3-Fnn | 49939 | 49966.2 | Evaporator fans ON time in duty cycle night mode | Byte | - | 0...99 | num |
| V3-FnF | 49940 | 49966.4 | Evaporator fans OFF time in duty cycle night mode | Byte | - | 0...99 | num |
| V3-ESF | 49941 | 49966.6 | Night activation mode | Byte | - | 0...1 | flag |
| V3-Att | 49903 | 49967 | **HAL** and **LAL** parameter mode (absolute or relative) | Byte | - | 0...1 | flag |
| V3-AFd | 17070 | 49967.2 | Alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| V3-HAL | 17090 | 49967.4 | Maximum alarm threshold | Word | Y | **LAL**...320 | °C/°F |
| V3-LAL | 17092 | 49967.6 | Minimum alarm threshold | Word | Y | -67.0...**HAL** | °C/°F |
| V3-PAO | 49904 | 49968 | Alarm disabling after power-on | Byte | - | 0...10 | hours |
| V3-dAO | 17072 | 49968.2 | Temperature alarm disabling time after defrost cycle | Word | - | 0...999 | min |
| V3-OAO | 49905 | 49968.4 | High and low temperature alarms disabling time after door closing | Byte | - | 0...10 | hours |
| V3-tdO | 49906 | 49968.6 | Open door disabling time | Byte | - | 0...250 | min |
| V3-tAO | 49907 | 49969 | Temperature alarms delay time | Byte | - | 0...250 | min |
| V3-dAt | 49908 | 49969.2 | Alarm signalling end of defrost due to timeout | Byte | - | 0...1 | flag |
| V3-rLO | 49909 | 49969.4 | An external alarm blocks the regulators | Byte | - | 0...1 | flag |
| V3-SA3 | 17096 | 49970.2 | Alarm setpoint for probe 3 | Word | Y | -67.0...320 | °C/°F |
| V3-dA3 | 17098 | 49970.4 | Probe 3 alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| V3-dOd | 49879 | 49970.6 | Enable utility power-off on activation of door switch | Byte | - | 0...3 | num |
| V3-dAd | 49880 | 49971 | Activation delay for digital inputs | Byte | - | 0...255 | min |
| V3-dCO | 49950 | 49981.4 | Delay in deactivating compressor after door opened | Byte | - | 0...255 | min |
| V3-PEn | 49935 | 49971.4 | Number of activations allowed per maximum/minimum pressure switch input | Byte | - | 0...15 | num |
| V3-PEi | 49936 | 49971.6 | Minimum/maximum pressure switch error count interval | Byte | - | 1...99 | min |
| V3-PEt | 49937 | 49972 | Delay in activating compressor after pressure switch deactivation | Byte | - | 0...255 | min |
| V3-LOC | 49912 | 49972.2 | Enable button pad lock | Byte | - | 0...1 | flag |
| V3-PS1 | 49929 | 49972.4 | Password 1 value | Byte | - | 0...250 | num |
| V3-PS2 | 49930 | 49972.6 | Password 2 value | Byte | - | 0...250 | num |
| V3-ndt | 49913 | 49973 | Display with decimal point | Byte | - | 0...1 | flag |
| V3-CA1 | 17074 | 49973.2 | Cell probe calibration | Word | Y | -12.0...12.0 | °C/°F |
| V3-CA2 | 17076 | 49973.4 | Evaporator probe calibration | Word | Y | -12.0...12.0 | °C/°F |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| V3-CA3 | 17100 | 49973.6 | Probe 3 calibration | Word | Y | -12.0...12.0 | °C/°F |
| V3-ddL | 49915 | 49974.6 | Resource locking after defrost end | Byte | - | 0...2 | num |
| V3-Ldd | 49938 | 49975 | Display lock timeout from defrost end | Byte | - | 0...255 | min |
| V3-dro | 49932 | 49975.2 | °C/°F selection | Byte | - | 0...1 | flag |
| V3-ddd | 49916 | 49975.4 | Selection of main display value | Byte | - | 0...3 | num |
| V3-SHH | 17102 | 49975.6 | Maximum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| V3-SLH | 17104 | 49976 | Minimum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| V3-drA | 49943 | 49976.2 | Minimum dwelling time in critical area before alarm signalling | Byte | - | 0...99 | min |
| V3-drH | 49944 | 49976.4 | HACCP alarm reset time from last manual reset | Byte | - | 0...250 | hours |
| V3-H50 | 49945 | 49976.6 | Enable HACCP alarms storage with/without alarm relay enabling | Byte | - | 0...2 | num |
| V3-H51 | 49946 | 49977 | HACCP alarms save exclusion time (button or digital input) | Byte | - | 0...250 | min |
| V3-H00 | 49931 | 49977.2 | NTC/PTC analogue input type selection | Byte | - | 0...2 | num |
| V3-H11 | 17082 | 49978.2 | Configuration and polarity of digital input 1 | Word | Y | -9...9 | num |
| V3-H12 | 17094 | 49978.4 | Configuration and polarity of digital input 2 | Word | Y | -9...9 | num |
| V3-H21 | 49918 | 49978.6 | Configuration of digital output 1 | Byte | - | 0...6 | num |
| V3-H22 | 49919 | 49979 | Configuration of digital output 2 | Byte | - | 0...6 | num |
| V3-H23 | 49920 | 49979.2 | Configuration of digital output 3 | Byte | - | 0...6 | num |
| V3-H24 | 49921 | 49979.4 | Configuration of digital output 4 | Byte | - | 0...6 | num |
| V3-H25 | 49922 | 49979.6 | Configuration of digital output 5 (Buzzer) | Byte | - | 0...6 | num |
| V3-H31 | 49923 | 49980 | Button configuration ⏫ | Byte | - | 0...6 | num |
| V3-H32 | 49924 | 49980.2 | Button configuration ⏬ | Byte | - | 0...6 | num |
| V3-H42 | 49927 | 49981 | Evaporator probe present | Byte | - | 0...1 | flag |
| V3-H43 | 49942 | 49981.2 | Probe Pb3 present | Byte | - | 0...1 | flag |
| **Application 4 parameters** | | | | | | | |
| V4-Set | 17260 | 50132.4 | Control Setpoint | Word | Y | **LSE**...**HSE** | °C/°F |
| V4-diF | 17232 | 50132.6 | Activation differential | Word | - | 0.1...30.0 | °C/°F |
| V4-HSE | 17262 | 50133 | Maximum value the setpoint can be set to | Word | Y | **LSE**...320 | °C/°F |
| V4-LSE | 17264 | 50133.2 | Minimum value the setpoint can be set to | Word | Y | -67.0...**HSE** | °C/°F |
| V4-OSP | 17234 | 50133.4 | Setpoint offset | Word | Y | -30.0...30.0 | °C/°F |
| V4-HC | 50052 | 50133.6 | Operating mode (Heating/Cooling) | Byte | - | 0...1 | flag |
| V4-Ont | 50057 | 50134.4 | Compressor output ON time with faulty Pb1 probe | Byte | - | 0...250 | min |
| V4-OFt | 50058 | 50134.6 | Compressor output OFF time with faulty Pb1 probe | Byte | - | 0...250 | min |
| V4-dOn | 50059 | 50135 | Compressor output enabling delay from request | Byte | - | 0...250 | s |
| V4-dOF | 50060 | 50135.2 | Compressor output enabling delay from shutdown | Byte | - | 0...250 | min |
| V4-dbi | 50061 | 50135.4 | Delay between two consecutive starts of the compressor output | Byte | - | 0...250 | min |
| V4-OdO | 50062 | 50135.6 | Delay output enabling from power-on | Byte | - | 0...250 | min |
| V4-dCS | 17282 | 50136 | Deep cooling setpoint | Word | Y | -67.0...320 | °C/°F |
| V4-tdC | 50124 | 50136.2 | Deep cooling duration | Byte | - | 0...255 | min |
| V4-dcc | 50125 | 50136.4 | Defrost delay after deep cooling | Byte | - | 0...255 | num |
| V4-dtY | 50063 | 50136.6 | Type of defrost | Byte | - | 0...2 | num |
| V4-dit | 50104 | 50137 | Interval between defrost cycles | Byte | - | 0...250 | hours |
| V4-dCt | 50066 | 50137.6 | Defrost interval count mode | Byte | - | 0...3 | num |
| V4-dOH | 50067 | 50138 | Defrost cycle enabling delay from request | Byte | - | 0...59 | min |
| V4-dEt | 50068 | 50138.2 | Defrost timeout | Byte | - | 1...250 | min |
| V4-dSt | 17236 | 50138.4 | Defrost end temperature | Word | Y | -67.0...320 | °C/°F |
| V4-dPO | 50069 | 50138.6 | Defrost enabling request from power-on | Byte | - | 0...1 | flag |
| V4-FSt | 17240 | 50139.6 | Evaporator fans disabling temperature | Word | Y | -67.0...320 | °C/°F |
| V4-FAd | 17244 | 50140.2 | Evaporator fans activation differential | Word | - | 1.0...50.0 | °C/°F |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **V4-Fdt** | 50072 | 50140.4 | Evaporator fans delay after defrost cycle | Byte | - | 0...250 | min |
| **V4-dt** | 50073 | 50140.6 | Coil drainage time | Byte | - | 0...250 | min |
| **V4-dFd** | 50074 | 50141 | Evaporator fans disabling during defrost time | Byte | - | 0...1 | flag |
| **V4-FCO** | 50075 | 50141.2 | Evaporator fans status with compressor output OFF | Byte | - | 0...2 | num |
| **V4-Fon** | 50077 | 50141.6 | Evaporator fans ON time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V4-FoF** | 50078 | 50142 | Evaporator fans OFF time in cyclic regulator mode | Byte | - | 0...99 | min |
| **V4-Fnn** | 50115 | 50142.2 | Evaporator fans ON time in duty cycle night mode | Byte | - | 0...99 | num |
| **V4-FnF** | 50116 | 50142.4 | Evaporator fans OFF time in duty cycle night mode | Byte | - | 0...99 | num |
| **V4-ESF** | 50117 | 50142.6 | Night activation mode | Byte | - | 0...1 | flag |
| **V4-Att** | 50079 | 50143 | **HAL** and **LAL** parameter mode (absolute or relative) | Byte | - | 0...1 | flag |
| **V4-AFd** | 17246 | 50143.2 | Alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V4-HAL** | 17266 | 50143.4 | Maximum alarm threshold | Word | Y | **LAL**...320 | °C/°F |
| **V4-LAL** | 17268 | 50143.6 | Minimum alarm threshold | Word | Y | -67.0...**HAL** | °C/°F |
| **V4-PAO** | 50080 | 50144 | Alarm disabling after power-on | Byte | - | 0...10 | hours |
| **V4-dAO** | 17248 | 50144.2 | Temperature alarm disabling time after defrost cycle | Word | - | 0...999 | min |
| **V4-OAO** | 50081 | 50144.4 | High and low temperature alarms disabling time after door closing | Byte | - | 0...10 | hours |
| **V4-tdO** | 50082 | 50144.6 | Open door disabling time | Byte | - | 0...250 | min |
| **V4-tAO** | 50083 | 50145 | Temperature alarms delay time | Byte | - | 0...250 | min |
| **V4-dAt** | 50084 | 50145.2 | Alarm signalling end of defrost due to timeout | Byte | - | 0...1 | flag |
| **V4-rLO** | 50085 | 50145.4 | An external alarm blocks the regulators | Byte | - | 0...1 | flag |
| **V4-SA3** | 17272 | 50146.2 | Alarm setpoint for probe 3 | Word | Y | -67.0...320 | °C/°F |
| **V4-dA3** | 17274 | 50146.4 | Probe 3 alarm activation differential | Word | - | 1.0...50.0 | °C/°F |
| **V4-dOd** | 50055 | 50146.6 | Enable utility power-off on activation of door switch | Byte | - | 0...3 | num |
| **V4-dAd** | 50056 | 50147 | Activation delay for digital inputs | Byte | - | 0...255 | min |
| **V4-dCO** | 50126 | 50157.4 | Delay in deactivating compressor after door opened | Byte | - | 0...255 | min |
| **V4-PEn** | 50111 | 50147.4 | Number of activations allowed per maximum/minimum pressure switch input | Byte | - | 0...15 | num |
| **V4-PEi** | 50112 | 50147.6 | Minimum/maximum pressure switch error count interval | Byte | - | 1...99 | min |
| **V4-PEt** | 50113 | 50148 | Delay in activating compressor after pressure switch deactivation | Byte | - | 0...255 | min |
| **V4-LOC** | 50088 | 50148.2 | Enable button pad lock | Byte | - | 0...1 | flag |
| **V4-PS1** | 50105 | 50148.4 | Password 1 value | Byte | - | 0...250 | num |
| **V4-PS2** | 50106 | 50148.6 | Password 2 value | Byte | - | 0...250 | num |
| **V4-ndt** | 50089 | 50149 | Display with decimal point | Byte | - | 0...1 | flag |
| **V4-CA1** | 17250 | 50149.2 | Cell probe calibration | Word | Y | -12.0 ...12.0 | °C/°F |
| **V4-CA2** | 17252 | 50149.4 | Evaporator probe calibration | Word | Y | -12.0 ...12.0 | °C/°F |
| **V4-CA3** | 17276 | 50149.6 | Probe 3 calibration | Word | Y | -12.0 ...12.0 | °C/°F |
| **V4-ddL** | 50091 | 50150.6 | Resource locking after defrost end | Byte | - | 0...2 | num |
| **V4-Ldd** | 50114 | 50151 | Display lock timeout from defrost end | Byte | - | 0...255 | min |
| **V4-dro** | 50108 | 50151.2 | °C/°F selection | Byte | - | 0...1 | flag |
| **V4-ddd** | 50092 | 50151.4 | Selection of main display value | Byte | - | 0...3 | num |
| **V4-SHH** | 17278 | 50151.6 | Maximum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V4-SLH** | 17280 | 50152 | Minimum HACCP alarm threshold | Word | Y | -67.0...320 | °C/°F |
| **V4-drA** | 50119 | 50152.2 | Minimum dwelling time in critical area before alarm signalling | Byte | - | 0...99 | min |
| **V4-drH** | 50120 | 50152.4 | HACCP alarm reset time from last manual reset | Byte | - | 0...250 | hours |
| **V4-H50** | 50121 | 50152.6 | Enable HACCP alarms storage with/without alarm relay enabling | Byte | - | 0...2 | num |

| Parameter | Value address | Visibility address | Description | Data size | CPL | Range | UOM |
|---|---|---|---|---|---|---|---|
| **V4-H51** | 50122 | 50153 | HACCP alarms save exclusion time (button or digital input) | Byte | - | 0...250 | min |
| **V4-H00** | 50107 | 50153.2 | NTC/PTC analogue input type selection | Byte | - | 0...2 | num |
| **V4-H11** | 17258 | 50154.2 | Configuration and polarity of digital input 1 | Word | Y | -9...9 | num |
| **V4-H12** | 17270 | 50154.4 | Configuration and polarity of digital input 2 | Word | Y | -9...9 | num |
| **V4-H21** | 50094 | 50154.6 | Configuration of digital output 1 | Byte | - | 0...6 | num |
| **V4-H22** | 50095 | 50155 | Configuration of digital output 2 | Byte | - | 0...6 | num |
| **V4-H23** | 50096 | 50155.2 | Configuration of digital output 3 | Byte | - | 0...6 | num |
| **V4-H24** | 50097 | 50155.4 | Configuration of digital output 4 | Byte | - | 0...6 | num |
| **V4-H25** | 50098 | 50155.6 | Configuration of digital output 5 (Buzzer) | Byte | - | 0...6 | num |
| **V4-H31** | 50099 | 50156 | Button configuration ⏫ | Byte | - | 0...6 | num |
| **V4-H32** | 50100 | 50156.2 | Button configuration ⏬ | Byte | - | 0...6 | num |
| **V4-H42** | 50103 | 50157 | Evaporator probe present | Byte | - | 0...1 | flag |
| **V4-H43** | 50118 | 50157.2 | Probe Pb3 present | Byte | - | 0...1 | flag |

# Folder visibility table

| Label | Address | Description | Data size | Range | AP1 Address | AP2 Address | AP3 Address | AP4 Address | UOM |
|---|---|---|---|---|---|---|---|---|---|
| **vis_CP** | 49316 | **CP** (Compressor) folder visibility | 2 bit | 0...3 | 49600 | 49776 | 49952 | 50128 | num |
| **vis_dEF** | 49316.2 | **dEF** (Defrost) folder visibility | 2 bit | 0...3 | 49600.2 | 49776.2 | 49952.2 | 50128.2 | num |
| **vis_FAn** | 49316.4 | **FAn** (Fans) folder visibility | 2 bit | 0...3 | 49600.4 | 49776.4 | 49952.4 | 50128.4 | num |
| **vis_AL** | 49316.6 | **AL** (Alarms) folder visibility | 2 bit | 0...3 | 49600.6 | 49776.6 | 49952.6 | 50128.6 | num |
| **vis_Lit** | 49317 | **Lit** (Lights & Digital Inputs) folder visibility | 2 bit | 0...3 | 49601 | 49777 | 49953 | 50129 | num |
| **vis_PrE** | 49317.2 | **PrE** (Pressure switch) folder visibility | 2 bit | 0...3 | 49601.2 | 49777.2 | 49953.2 | 50129.2 | num |
| **vis_Add** | 49312 | **Add** (Communication) folder visibility | 2 bit | 0...3 | - | - | - | - | num |
| **vis_diS** | 49317.4 | **diS** (Display) folder visibility | 2 bit | 0...3 | 49601.4 | 49777.4 | 49953.4 | 50129.4 | num |
| **vis_HCP** | 49317.6 | **HCP** (HACCP) folder visibility | 2 bit | 0...3 | 49601.6 | 49777.6 | 49953.6 | 50129.6 | num |
| **vis_CnF** | 49318 | **CnF** (Configuration) folder visibility | 2 bit | 0...3 | 49602 | 49778 | 49954 | 50130 | num |
| **vis_FPr** | 49318.2 | **FPr** (CopyCard) folder visibility | 2 bit | 0...3 | 49602.2 | 49778.2 | 49954.2 | 50130.2 | num |
| **vis_FnC** | 49318.4 | **FnC** (Functions) folder visibility | 2 bit | 0...3 | 49602.4 | 49778.4 | 49954.4 | 50130.4 | num |
| **vis_PA2** | 49364.3 | **PA2** (Password for accessing "Installer" parameters) folder visibility | 2 bit | 0...3 | 49634.3 | 49810.3 | 49986.3 | 50162.3 | num |

# Resource table

| Label | Address | Description | Data size | Range | UOM |
|---|---|---|---|---|---|
| **AI1** | 295 | Analogue input (view) 1 | Word | -67.0...320 | °C/°F |
| **AI2** | 297 | Analogue input (view) 2 | Word | -67.0...320 | °C/°F |
| **AI3** | 299 | Analogue input (view) 3 | Word | -67.0...320 | °C/°F |
| **D.I. 1** | 33056.7 | Digital input 1 | 1 bit | 0...1 | flag |
| **D.I. 2** | 33056.2 | Digital input 2 | 1 bit | 0...1 | flag |
| **E1** | 32876.1 | Analogue input 1 fault | 1 bit | 0...1 | flag |
| **E2** | 32876.2 | Analogue input 2 fault | 1 bit | 0...1 | flag |
| **E3** | 32877 | Analogue input 3 fault | 1 bit | 0...1 | flag |
| **PA** | 32876.3 | Critical pressure | 1 bit | 0...1 | flag |
| **nPA** | 32878.5 | Pressure switch | 1 bit | 0...1 | flag |
| **EA** | 32876.4 | External | 1 bit | 0...1 | flag |
| **AH1** | 32876.5 | Analogue input 1 high threshold exceeded | 1 bit | 0...1 | flag |

| Label | Address | Description | Data size | Range | UOM |
|---|---|---|---|---|---|
| AL1 | 32876.6 | Analogue input 1 low threshold exceeded | 1 bit | 0…1 | flag |
| OPd | 32876.7 | Door open | 1 bit | 0…1 | flag |
| AllarmHACCP | 32877.1 | HACCP alarm | 1 bit | 0…1 | flag |
| AllAlta3 | 32876 | Over temperature alarm | 1 bit | 0…1 | flag |
| Tout_SBR | 32878 | Defrost timeout | 1 bit | 0…1 | flag |
| B_Alarm | 32891.5 | Alarm | 1 bit | 0…1 | flag |
| Compressor | 32886.3 | Compressor | 1 bit | 0…1 | flag |
| Defrost | 32886.5 | Defrosting status | 1 bit | 0…1 | flag |
| Fans | 32888.7 | Evaporator fans | 1 bit | 0…1 | flag |
| Door | 32896.3 | Door | 1 bit | 0…1 | flag |
| Reduced set | 32882 | Reduced set | 1 bit | 0…1 | flag |
| AUX | 32882.4 | Auxiliary relay control output | 1 bit | 0…1 | flag |
| modify parameters | 32882.5 | Parameters changed | 1 bit | 0…1 | flag |
| standby | 32882.1 | Standby | 1 bit | 0…1 | flag |
| Att_Sbr | 32865 | Activate manual defrost | 1 bit | 0…1 | flag |
| Att_SetR | 32865.1 | Economy mode On | 1 bit | 0…1 | flag |
| Disatt_SetR | 32865.2 | Economy mode Off | 1 bit | 0…1 | flag |
| TelRSetPar | 32865.3 | Reset changed parameters indicator | 1 bit | 0…1 | flag |
| ROnAux | 32865.4 | Auxiliary output On | 1 bit | 0…1 | flag |
| ROffAux | 32865.5 | Auxiliary output Off | 1 bit | 0…1 | flag |
| ROnOn | 32865.6 | Power-on controller | 1 bit | 0…1 | flag |
| ROffOff | 32865.7 | Power-off controller | 1 bit | 0…1 | flag |

**Note** (only for address 32865): to send RW commands (read/write) to the controller, a timer must be activated in advance using a word containing a time expressed in seconds at the address 115 (0x73). The commands are accepted only within the time set.

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